GNUSLETTER

Volume 42 / Number 1
June 2025

ANTELOPE SPECIALIST GROUP

IUCN Species Survival Commission
Antelope Specialist Group

GNUSLETTER is the biannual newsletter of the IUCN SSC Antelope Specialist Group (ASG). First published in 1982 by the first ASG Chair Richard D. Estes, the intent of *GNUSLETTER*, then and today, is the dissemination of reports and information regarding antelopes and their conservation.

ASG Members are an important network of individuals and experts working across disciplines throughout Africa, Asia and America. Contributions (original articles, field notes, other material relevant to antelope biology, ecology, and conservation) are welcomed and should be sent to the Co-Chairs or the ASG Programme Office. *GNUSLETTER* is published in English in electronic form and distributed widely to members, non-members, and the IUCN SSC global conservation network. To be added to the distribution list please contact asgpo@marwell.org.uk.

The Antelope Specialist Group Programme Office is hosted and supported by Marwell Wildlife

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Front cover photo: *The last scimitar-horned oryx, Aïr, Niger, 1980 © John Newby*
Rear cover photos: *Goitered gazelles, Samukhi plain, Georgia © V. Kochiashvili APA-WWF*

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FROM IUCN AND ASG

Red List assessments

A new Red List assessment of the Wild Camel *Camelus ferus* has been submitted by ASG to IUCN. The species was last assessed in 2008 and since then extensive new research has been carried out in China by Dr Xue Yadong and colleagues from the Chinese Academy of Forestry and in Mongolia by Dr Anna Jemmett and Dr Adiya Yadamsuren. The Wild Camel population is split into three isolated patches and numbers a minimum of 780 mature individuals. Climate change modelling predicts that 44% of the main habitat will be lost by the 2050s. The new assessment is due for publication in the next IUCN Red List update, scheduled for October 2025.

CMS Saiga Memorandum of Understanding

The Fifth Meeting of Signatories to the Memorandum of Understanding (MOU) on Saiga Conservation took place in Astana, Kazakhstan, on 12-14 March 2025, attended by government representatives from the range states - Kazakhstan, Uzbekistan, Russia, Turkmenistan, and Mongolia. The meeting was held under the framework of the Convention on Migratory Species (CMS). Since the MOU was first established in 2006, it has provided a platform for countries to align efforts, share knowledge, and agree on measures to protect the saiga across its range. Participants adopted a five-year conservation plan focused on human-wildlife conflict, disease management, monitoring, and sustainable use. Kazakhstan proposed international trade in saiga horn, which will require further consultations ahead of the next CITES Conference of the Parties (COP20) which will take place inn Samarkand, Uzbekistan from 24 November to 5 December 2025.

Sahel & Sahara Interest Group meeting 2025

The 21st annual SSIG meeting took place on 7-9 May 2025 in Tozeur, Tunisia, hosted by the Direction Générale des Forêts of Tunisia (Ministry of Agriculture, Water Resources and Fisheries), and facilitated by Sahara Conservation with the support of Marwell Wildlife. The 2025 conference focused on enhancing the role of grassroot initiatives in conservation and sustainable development and was structured around cross-cutting themes, focused on the Sahara and the Sahel. There were four presentations on dama gazelle and one on slender-horned gazelle surveys in Egypt. A side-event on dama gazelle took place to communicate progress on the plans for captive breeding and release in Ouadi Rimé-Ouadi Achim Faunal Reserve, Chad and to collect further updates. A second side-event took place on slender-horned gazelle in Tunisia covering captive breeding proposals and field surveys.

Participants at the 21st SSIG meeting in Tozeur

Forthcoming events

World Hirola Day, 15 August 2025

The Hirola Conservation Program established and celebrated the world's first hirola day on 12th Aug 2015. The date coincides with World Elephant Day in an effort to connect the two species. Events taking place on 12 August unite communities, highlight conservation progress, and raise awareness about the plight of Hirola.

Scimitar-horned Oryx Day, 16 August 2025

Marwell Wildlife and the British and Irish Association of Zoos and Aquaria (BIAZA) are excited to announce the first-ever World Scimitar-horned Oryx Day, taking place on 16 August 2025. Following a successful public campaign in 2024, the day celebrates the oryx's remarkable return from extinction in the wild. It recognises the power of global collaboration to bring a species back from the brink.
https://biaza.org.uk/campaigns/detail/scimitar-horned-oryx-day
Point of contact: Sophie Whitemore sophiew@marwell.org.uk

Marwell Antelope Conference, 17-18 September 2025

Marwell Wildlife

A two-day Antelope Conference hosted by Marwell's Hoofstock team in collaboration with the BIAZA Mammal Working Group - Ungulate Subgroup will take place this September. The event will cover a broad range of antelope-related topics including husbandry, veterinary care, and conservation, with a strong emphasis on ex situ efforts. Details and registration: https://biaza.org.uk/events/detail/marwell-antelope-conference-2025

Ethiopian antelope conservation workshop

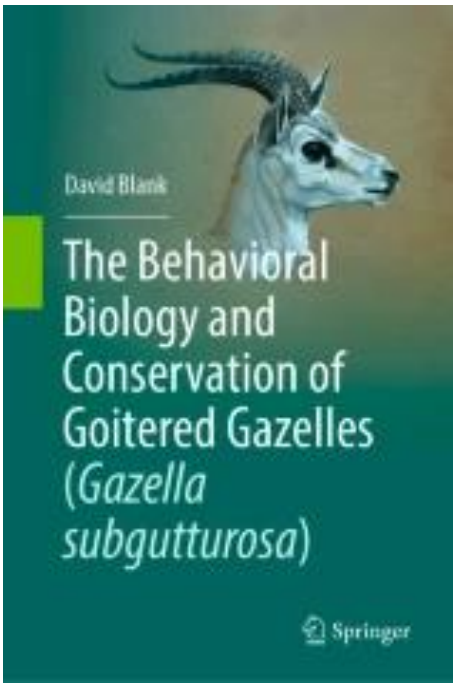
ASG and the Ethiopian Wildlife Conservation Authority are jointly organising a workshop in Addis Ababa on 23-25 September 2025 to develop a "Conservation Roadmap and selected Species Action Plan workshop for Ethiopian Antelopes".

IUCN World Conservation Congress 2025

The IUCN World Conservation Congress 2025 (WCC) will take place on 9-15 October 2025 in Abu Dhabi, UAE, hosted by the Environment Agency Abu Dhabi. Details: https://iucncongress2025.org/

New publications

New monograph on the Goitered Gazelle Gazella subgutturosa



Springer Nature Link has published a monograph on the species, written by David Blank who completed his PhD thesis on the goitered gazelle species in Kazakhstan. This comprehensive and fully illustrated book summarizes all known information on *Gazella subgutturosa*, including information on feeding ecology, behaviour, vocalizations, parasites and diseases, and conservation. This monograph will be of interest to professional researchers on ungulates, university staff, students, and naturalists.
Hardcover ISBN978-3-031-83503-2
Softcover ISBN978-3-031-83506-3, eBook ISBN978-3-031-83504-9
https://link.springer.com/book/10.1007/978-3-031-83504-9?page=2#toc

European studbook of Lesser kudu Tragelaphus imberbis

The lesser kudu *Tragelaphus imberbis (Blyth, 1869)* European studbook 2024, updated to 31 December 2024 and compiled by EEP Coordinator Beatrice Steck, has been published by Zoo Basel, Switzerland.
www.zoobasel.ch

ASG co-Chair on visit to Senegal

In February 2025, ASG co-Chair P. Chardonnet paid a visit to Senegal, starting with a meeting with the Director of the IUCN Senegal Country Office, Dr Youssouph Diedhiou.

The Director of Senegal's National Parks and CBD Focal Point for Senegal, Colonel Ibrahima Gueye (right), and his deputy Dr Babakar Ngor Youm (left), granted an appointment to ASG for discussing, among various topics, the updating of the conservation status of antelopes in the country.

Meeting at the Inter-State School of Veterinary Sciences and Medicine of Dakar (EISVM) to discuss about the “Master in wildlife health and management” with Prof. Onbri Bassa Gbati, master program coordinator (second from right).

Gathering of the "West Africa Sitatunga Group" (WASG) at the forum ‘PPI FFEM 2025’ in Toubacouta, Siné Saloum, for discussing the updating of the conservation status of sitatunga. Among members: Maximin Djongo (NGO ‘BEES’), Maurras Akakapo (NGO ‘Biosphère’), Abdou Cherifou Ikoukomon (NGO ‘ECODEC’), Rachel Ashegbofe Ikemeh (SW/Niger Delta Forest Project), Damien Martin (PPI West Africa).

Meeting at Bandia Reserve with co-Chair of NGO ‘Antelope Conservation’, Assoc. Prof. Karolína Brandlová (third from right), Czech University of Life Sciences Prague, and Christophe Dering (right), manager of Bandia Reserve, Senegal, to discuss western giant eland conservation and prospects for further cooperation.

RESEARCH AND NOTES FROM THE FIELD

The fall and rise of the Scimitar-horned Oryx: a personal account - Part I: The fall

John Newby

Sometime towards the end of the 1980s the scimitar-horned oryx *Oryx dammah* became extinct in the wild. This magnificent, large, long-horned antelope was previously abundant, with a range that spread right across the sub-desert grasslands of Africa's Sahel, from the Atlantic coast of Mauritania and southern Morocco to Egypt and Sudan along the Nile Valley. Over little more than a century, the oryx population had tumbled from possibly hundreds of thousands to a tiny handful of individuals, pushed into the remotest parts of its range. Had it not been for the captive populations living in zoos, ranches and private collections, the species would be extinct period, gone the way of the bluebuck or the quagga. Paradoxically, while the oryx was struggling to survive in its native Africa, it was breeding very successfully elsewhere, underlining the tremendous value of maintaining secure "insurance" populations of threatened species should at some future date restoration and reintroduction become necessary.

Figure 1. *Drought-stricken oryx, OROAFR, Chad 1973 © John Newby*

When I arrived in Chad in 1971, one of my first tasks as a young and completely inexperienced wildlife biologist was to help rangers working in the vast Ouadi Rimé-Ouadi Achim Game Reserve protect the scimitar-horned oryx and other desert species, such as the addax, dorcas

and dama gazelles. At the time, the oryx seemed fairly common, and although the local people hunted them on horseback with spears, the take seemed sustainable. As I soon found out, my growing interest in the oryx and the data I was collecting was building on the earlier work of a French agronomist, Hubert Gillet, who had a passion for wildlife and was one of the protagonists behind the establishment of the Ouadi Rimé-Ouadi Achim reserve in 1969. His writings (Gillet 1964, 1965) highlighted the serious threat to wildlife, particularly from all forms of hunting, both traditional and modern.

At the time, however, I was seeing oryx on a regular basis and was more concerned about the effects of the terrible drought that had been ravaging the Sahel since the late 1960s. Not only were adult oryx dying of thirst and starvation (Figure 1), but females were aborting and abandoning their calves (Figure 2).

Figure 2. *Abandoned oryx calf, OROAFR, Chad 1973 © John Newby*

The hot seasons of 1972 and 1973 were particularly harsh, not only for the wildlife but also for the many thousands of people who had lost everything and were being driven into abject poverty and emigration to countries in North Africa and beyond.

Fortunately, the drought broke in the summer of 1973 with good rainfall and widespread grazing. The oryx's ability to bounce back from periods of adversity meant that young calves were soon to be seen again. Gathered on fresh green pastures, it was during the early wet season of 1974 that I first witnessed massed herds of oryx, addax and gazelle, a phenomenon mentioned by earlier travellers (Nachtigal 1873, Buchanan 1922, 1926). As the season progressed, the oryx became more dispersed across the landscape, but on more than one occasion I saw herds of over a thousand animals. The ability of wildlife to sense and smell areas of often distant rainfall allows desert antelope to find and graze on virgin pastures long before herders and their livestock arrive.

The wet season of 1975 was also good, beneficial to both wildlife and livestock. At that time, the vast majority of the Ouadi Rimé-Ouadi Achim reserve was virtually uninhabited for much of the year. With very few deep wells to draw water from, many herders were forced to leave as soon as the ephemeral, seasonal surface water that had accumulated during the short rainy season dried up. They would inevitably leave behind vast areas of grazing land for wildlife to occupy during the long, hot and rainless dry season; a time when wildlife is particularly vulnerable. Historically, the presence of this natural buffer zone between wildlife and livestock has undoubtedly been instrumental in allowing aridland antelope populations to reach such significant numbers. Oryx and other large Sahelian ungulates can go for very long periods without drinking water, obtaining all the liquid they need from the vegetation they eat, especially the fruits and vines of the bitter desert melon.

1975 was also the year I obtained a more global appreciation of the status of the wildlife of the Sahel and Sahara. As a result of the drought of the late 1960s and early 1970s, and the recent establishment of the United Nations Environment Programme (UNEP), the first regional assessment of the status of Sahelian wildlife was being carried out. My role was to cover Chad and Niger. As the data came together, it became clear that my perspective, based solely on work in central Chad, where there was still a sizeable oryx population, was at odds with the broader, regional realities. Elsewhere, the oryx was either extinct or under imminent threat of extinction. This made the Chad population somewhat unique and extremely important for the survival of the species globally.

The more I read, the more I discovered that the alarm bells had been ringing for some time. In his seminal work on wildlife and hunting, Henri Carbou, writing under the name of "*In Tanoust*" (In Tanoust 1930), warned of dwindling oryx numbers. Similarly, British authors Henry Brocklehurst (Brocklehurst 1931) and Robert Henriques (Henriques 1938) wrote about the decline of desert wildlife in Sudan. In Mali, Niger and Chad, traditional hunting guilds were facing increasing hardship due to the dwindling wildlife resources on which their livelihoods depended (Gabus 1952, 1977; Malbrant 1952). The large arid land antelopes were being rapidly hunted out thanks to the proliferation and spread of automatic weapons and desert-going vehicles (Figure 3). Unfortunately, virtually nothing was being done on the conservation front to address this drastic situation.

Figure 3. *Poached oryx, OROAFR, Chad, 1976 © John Newby*

By the mid-1970s, Chad was in serious political turmoil, threatened by widespread dissent and a growing armed rebellion in the north and beyond its borders[1]. While some work was still possible in the reserve, by mid-1976 all meaningful activity had ceased. Squeezed between warring factions in the heart of its range, the oryx was no match for the modern weaponry and the "technicals" that criss-crossed the area with impunity. Inevitably, by the end of the decade, the reserve's large mammal fauna had virtually disappeared (Newby 1978, 1980).

After almost eight years in the country, I left Chad in early 1979, just days before the outbreak of the intense civil war that was to last until 1982. I travelled to neighbouring Niger to carry out a detailed, country-wide survey to identify areas where oryx and addax conservation work could be continued if the situation in Chad became untenable. Over the next three months, fieldwork was carried out in the Azawak region of western Niger, a former stronghold of the scimitar-horned oryx, and the Aïr Mountains, a spectacular region of diverse desert habitats, home to relict populations of addax and dama gazelle, but not oryx. A third region, that of the Termit Massif, was put off limits to us by the authorities because of the war in neighbouring Chad. Regrettably, this was the region we had most hoped to visit, as there were rumours that oryx were still present there.

With war still raging in Chad and no sign of oryx anywhere in our mission area, it was decided to concentrate efforts on the Aïr Mountains, while keeping an eye out for opportunities to visit Termit and other likely oryx habitats as soon as possible. Work began in the Aïr in early 1980 with the aim of establishing a large, protected area to conserve endangered species, such as the addax, dama gazelle, Barbary sheep and North African ostrich, as well as the area's rich prehistoric and cultural heritage[2]. As part of the process, my role was to compile the baseline information needed to justify the creation of a protected area and help the authorities build a solid case for its gazetting.

Because of its altitude and location at the interface of the Sahel and the Sahara, the Aïr Mountains are in many ways a Sahelian oasis within a larger Saharan matrix. This is well reflected in the fauna and flora, with elements of both Sahelian and Saharan biomes. There are even remnants of plant communities at higher altitudes or in atypical micro-habitats more closely associated with Mediterranean or tropical biomes. Several species of fig and the wild olive fall into this category (Figure 4).

Figure 4. *Wild olive, Tamgak, Air, 1990 © John Newby*

Overall, though, this was not oryx habitat. There simply wasn't the rainfall or the extensive, densely vegetated grasslands needed to support a viable population of this large Sahelian ungulate. Even the more desert-adapted addax was very rare.

[1] 1974 saw the "Affaire Claustre » hit the headlines. The same year, I recall meeting the ill-fated commandant Galopin in Arada as he made his way north to Bardai in the Tibesti region of Chad to try and negotiate with Hissein Habré the release of French archaeologist, Françoise Claustre.

[2] In 1986, the Government of Niger decreed the establishment of the Aïr & Ténéré National Nature Reserve.

One day, however, fieldwork along the eastern side of the Aïr revealed some interesting tracks that I immediately recognised as those of oryx. My local guide, Ahmed, couldn't believe his eyes. According to him, the oryx (known as *eezam* in Tamasheq) hadn't been seen for decades. Leaving our vehicle, we carefully followed the spoor of the small herd for a couple of kilometres before finding the group of four animals standing peacefully on a sparsely vegetated gravel plain amongst the nearby peaks (cover photo). This was certainly not typical oryx habitat and it was likely that the small herd had migrated into the Aïr from further south, where they were once known to occur. Like the dama gazelle today, it could well be that the oryx had chosen or been driven into this atypical, desolate and uninhabited area to seek refuge from hunting pressure and harassment elsewhere.

Figure 5. *Oryx horn fragments, Termit, Niger 2002 © John Newby*

Before I left Niger in 1991, I visited many parts of the country in search of scimitar-horned oryx, including the Termit Massif and neighbouring desert areas on many occasions. Apart from a few weathered horn fragments (Figure 5), there was no sign of the oryx and little information from locals other than vague suggestions that any remaining oryx had probably migrated into Chad. It is likely that any oryx remaining in Termit perished during the terrible drought of 1984.

Little did we know at the time, but the photographs we took in the Aïr on 5 May 1980 of the male, female and two younger animals are the last known images of oryx in the wild before their extinction.

With no oryx left in the wild, it was clear that any future initiative to restore the species to its native habitat would have to rely on animals bred and kept in captivity in zoos and private collections, mostly outside Africa.

Part 2 will follow in the next issue of Gnusletter

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Reintroduction of Goitered Gazelles in the transboundary area of Azerbaijan and Georgia

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Figure 1. *Goitered Gazelle in Samukh Protected Area, Georgia (© V. Kochiashvili WWF/APA)*

Goitered gazelle (*Gazella subgutturosa subgutturosa*) populated the Kura-Araks river lowlands entirely in the Caucasus in the early 1900s. Since the 1930s, the gazelle`s range and number rapidly declined in the Caucasus: the species range had split into several fragments due to intensive hunting and agricultural expansion and fell to critical size by the 1960s when the species became extinct in Georgia and most parts of the species range in Azerbaijan. After establishing the target protected areas in Azerbaijan, the number of gazelles significantly increased, but the population is mostly concentrated in the isolated Shirvan protected areas on the Caspian Sea coast, which currently accommodates and protects about 90% of the gazelle population of Azerbaijan. Goitered Gazelle is globally threatened: listed on the IUCN Red List as Vulnerable (VU). In the Red Book of Azerbaijan, it is listed as a "species distributed at the edge of its global range, which can become extinct without protection measures" while in the Red List of Georgia, the species is currently listed as extinct in the country considered to be re-assessed following results of the ongoing restoration programme.

After a feasibility study carried out by Dr. David Mallon (Co-Chair of IUCN/SSC Antelope Specialist Group) in 2008, reintroduction/translocation activities started in Azerbaijan in 2010 in different areas (historical habitats) suitable for gazelles. In 2013, the Azerbaijan-Georgia transboundary area of the Iori-Ajinour Plateau was prioritized for restoration of the

transboundary population, and since then, the gazelle restoration has been successfully implemented in both sides of the transboundary area – Ajinour steppe in Azerbaijan and Samukh valley in Georgia (Figure 2).

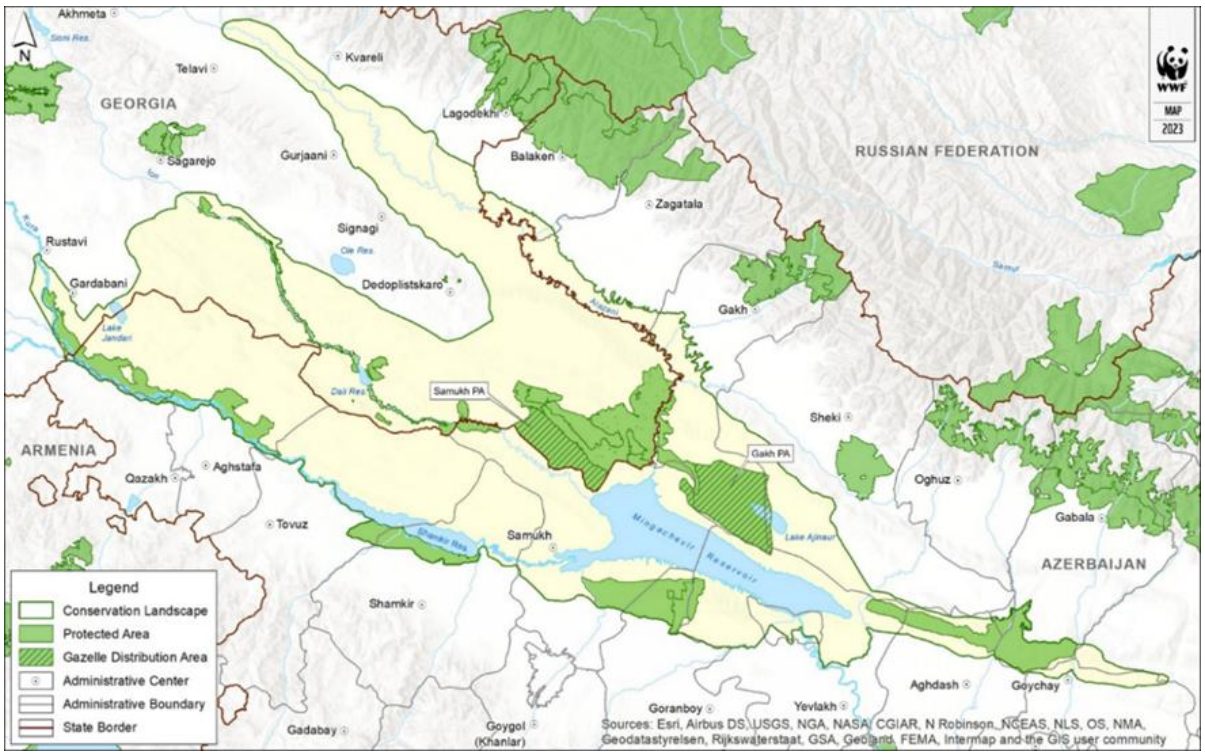

Figure 2. *Transboundary reintroduction area Samukh PA/Georgia and Gakh PA/Azerbaijan*

As the project area is located in arid and semi-arid landscapes dominated by semi-deserts and steppes, where the average annual rainfall does not exceed 400 mm (the lowest amount of precipitation in the country in the case of Georgia) and the temperature in summer reaches 45-47 °C in the shade and evaporation can reach 1000-1200 mm it is vulnerable to climate change impacts and finally puts the populations of gazelles in a very stressful situation.

Although gazelles are affected by different external factors, water scarcity remains the most stressful factor for both populations. Water holes play a critically important role in summer during the calving season. Females stay closer to water resources as the survival of calves largely depends on the availability of water resources. In searching for water resources, gazelles are forced to split into small groups and migrate to unfavourable habitats, such as areas covered with thick bushes, forests, and hills increasing the risks of predator attacks and poaching, making the newly established small populations more vulnerable - in such terrain they cannot escape easily as they can in open areas. Ultimately, water scarcity hampers the establishment of self-sustaining populations of gazelles in their historical transboundary habitat.

The main goal of the project is to build up a viable population in the transboundary area of Azerbaijan and Georgia though “hard release” of translocated Gazelles from Shirvan NP, conduct regular monitoring of gazelle population and reduce the impact of climate change-induced droughts and water scarcity on the newly established vulnerable populations of gazelles in the transboundary area of Azerbaijan and Georgia.

Since 2010 in total 257 Gazelles has been successfully translocated from Shirvan National Park and released into the transboundary reintroduction area. Following the monitoring results, a rapid natural growth in population size has been observed since 2019; according to the last census in autumn 2024 the current overall estimated number of gazelles in Samukhi valley in Georgia reached 400 individuals (Figure 3.) while the number of gazelles in Ajinour steppe in Azerbaijan has reached around 504 individuals (Figure 4).

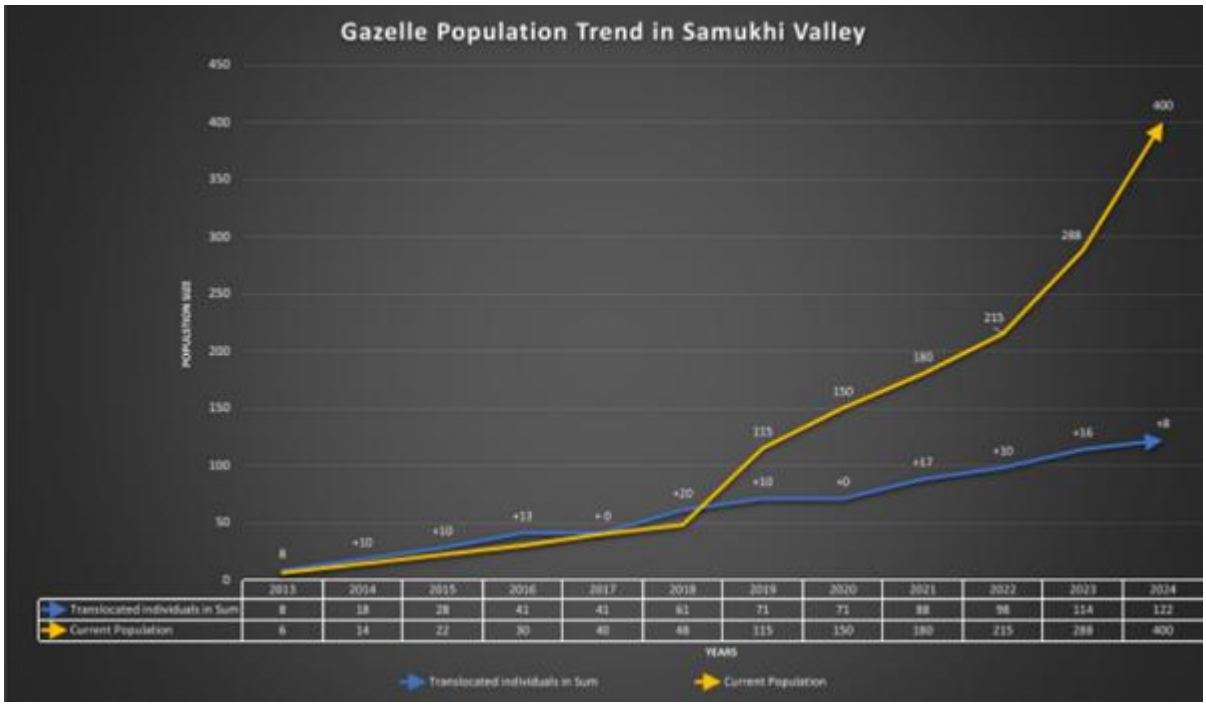

Figure 3. *Gazelle population trend and translocated gazelles in Samukhi Valley/Georgia*

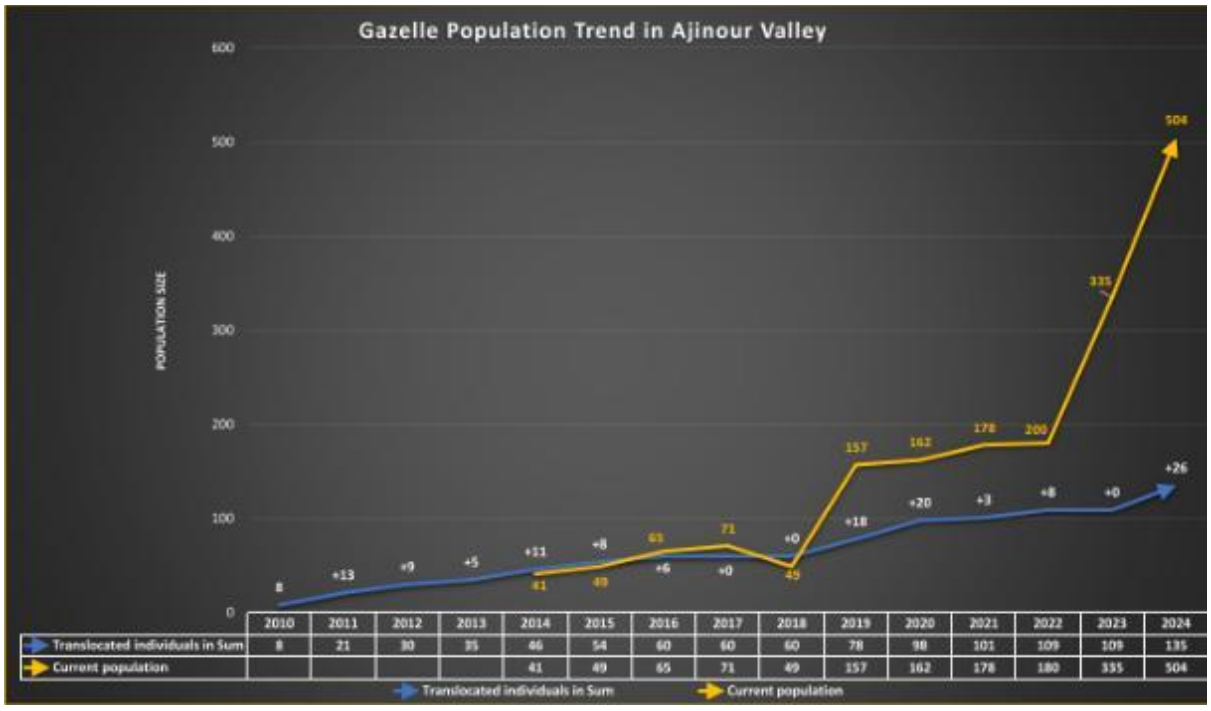

Figure 4. *Gazelle population trend and translocated gazelles in Ajinour Valley/Azerbaijan*

The gazelle restoration Programme in the transboundary area of Azerbaijan and Georgia includes a well-established monitoring component, with three overall methodologies i) annual transect counting, ii) tracking of animals through GPS and terrestrial triangulation, and iii) camera traps near water places. The project puts its effort to identify challenges and risks that are faced by gazelle populations and take necessary measures to address them. Climate change-induced droughts and associated water scarcity is one of the key threats to the populations of gazelles. Maintaining artificial watering holes in close cooperation with livestock breeder (shepherds), enhancing protected area management effectiveness and communicating the project outcomes with main stakeholders and partners are additional important pillars of the reintroduction Programme.

Figure 5. *Male and female goitered gazelles in Samukh Protected Area, Georgia (© V. Kochiashvili WWF/APA)*

Figure 6. *Male goitered gazelle in Samukh Protected Area, Georgia (© V. Kochiashvili WWF/APA)*

The gazelle restoration programme is being implemented and led by WWF (Caucasus Program Office and Azerbaijan) in close cooperation with the Governments of Azerbaijan (Ministry of Ecology and Natural Resources) and Georgia (the Ministry of Environmental Protection and Agriculture and its Agency of Protected Areas). In the case of Georgia, additional coordination is carried out with the local government at the municipality level and Azerbaijan with the administrations of protected areas within the restoration Programme area – Ilisu State Reserve and Gakh Sanctuary. The Programme has received support through the German Government (BMZ/BENGO & KfW until 2019). WWF-Germany provides funding and technical support since 2010. Since 2024 Karlsruhe Zoo (which coordinates the EAZA/EEP ex-situ breeding programme for the goitered gazelle) also joined the programme by providing funding and technical support.

Figure 7. *Goitered gazelles in Samukh Protected Area, Georgia (© V. Kochiashvili WWF/APA)*

This article is dedicated to the memory of Dr. Nugzar Zazanashvili (former Conservation Director of WWF Caucasus Programme Office) who was one of the key initiators of the reintroduction Programme within the overall ecoregional conservation approach in the Caucasus.

Rediscovery of the Beira in Ethiopia

Håkan Pohlstrand, Brook Kassa, Hassan Kaariye

Figure 1. *Beira photographed on Hareg mountain, Ethiopia, on 8 February 2025 (© Håkan Pohlstrand)*

The beira *Dorcatragus megalotis* is endemic to the Horn of Africa. More than 90% of its range lies in northern Somalia (Somaliland and Puntland), extending into the Assa region of southeast Djibouti and small area in Ethiopia close to the borders with Somaliland and Djibouti (Yalden et al. 1984, Giotto et al. 2013).

Beira was first recorded in Ethiopia in 1899 when Powell-Cotton (1902) obtained some specimens in the Marmar mountains on the border with Somaliland, near Bir Anod and Arroweina. In 1970, Melvin Bolton visited the Arroweina region in search of beira. With the help of information from local experts, he found and photographed a few individuals in the Marmar mountains (Bolton 1973). There have been no published records since then.

In early February 2025 we organised a field trip to the same area to search for beira. We searched the Marmar Mountains on 5-6 February. The terrain was rough which made progress slow. Although we found tracks and droppings of beira, we did not observe any animals directly.

We then camped near Hareg mountain and made a second search. On 8 February we located and photographed two groups of beira each containing four individuals on Hareg mountain, thereby confirming the continued presence of the species in Ethiopia, 55 years after the last

published sighting. This site lies 17 km from the border with Djibouti and 18 km from the border with Somaliland.

We were concerned to note the presence of packs of feral dogs in the area, These became established when camps engaged in construction of the new Addis Ababa-Djibouti railway line were abandoned. According to the authorities in the nearby town these feral dogs have reduced the numbers of Pelzen's gazelles *Gazella dorcas pelzelni* in the area and it is likely they will pose a threat to the beira in future.

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***Figure 2**. Beira photographed on Hareg mountain, Ethiopia, on 8 February 2025 (© Håkan Pohlstrand)*

Giant Sable Update 2025

Pedro Vaz Pinto

Figure 1. *Giant sable bull, Cangandala National Park, Angola, 2024 (© Pedro Vaz Pinto)*

Background

Soon after the end of the Angolan civil war in 2002, the Giant Sable Project was created and has since been implementing a series of activities to support the *in situ* conservation of the Critically Endangered (IUCN 2017) giant sable antelope (*Hippotragus niger variani*), in collaboration with the Angolan Government (Figure 1). With exception of rare dispersing males, giant sables have never been confirmed outside the boundaries of Cangandala National Park (CNP) and Luando Integral Nature Reserve (LINR). These two protected areas, combined, spread across approximately one million hectares in central Angola, comprising mostly pristine miombo woodlands, interspersed by drainage lines and characteristic open areas (locally known as *anharas*) covered by either grass or geoxylic shrub vegetation, and vast seasonally inundated floodplains along the Luando River. The giant sable population was estimated in the 1970's to be between 2,000 and 2,500 animals (with up to 90% in LINR) (Estes & Estes 1974), but as a consequence of the war the numbers plummeted to near extinction (Estes 1982, Vaz Pinto 2019). Although no census could be carried out immediately after the end of the war, it appears that the population may have dropped then to around 100 giant sables or less. The situation was especially dramatic in CNP, where all the bulls had eventually disappeared and the last surviving herd of females ended up hybridizing with roan antelopes (Vaz Pinto et al. 2016, Vaz Pinto 2019). This led to a rescue program, initiated in 2009, which involved the confinement of the last surviving females from CNP inside a 4,400 ha fenced camp and the introduction of a couple bulls and six young cows translocated from LINR, where a few surviving herds had also been located. The results obtained with this breeding program were exceptionally successful, allowing the Cangandala population to have been effectively snatched from the claws of extinction. Over the past 15 years, conservation measures, in both protected areas, have included enhanced security through a step-up in law enforcement, aerial campaigns with chemical immobilization and marking of sables with tracking collars every two or three years on average, and regular remote and on-the ground monitoring, while various lines of research have been focusing on genetics, ecology and spatial use.

Capture and marking operation in Luando Integral Nature Reserve in 2024

The regular monitoring of sables in Luando has proved hugely important in terms of security, especially benefitting from the use of GPS collars that allow us to track them remotely on a daily basis, in extremely remote areas. Since at least 2013, we have kept all known herds being tracked, some continuously, others with some gaps caused by technical failures and/or animal deaths. Although this methodology has proved extremely useful in terms of protection and also improving our knowledge on the species' ecology, it has the obvious drawback that aerial campaigns operated with helicopters are expensive exercises, and the GPS collars have a life span of two to three years, at most.

Figure 2. *Giant sable capture operation, Luando I.N.R., Angola, 2024 (© Pedro Vaz Pinto)*

With the previous operation having been concluded in 2022, but with a lot of collars having failed since, another collaring exercise had been scheduled for July 2024 (Figure 2). For this operation we followed the same successful formula used in 2022, namely by hiring the services of a Jet Ranger helicopter from Namibia, kindly facilitated by the organization AWCT and piloted by Carl-Heinz Moller, and with the veterinarian work expertly led by Charlotte Moueix and assisted by Kate Johnson. The visibility conditions were suboptimal, as the generous rains throughout the previous rainy season had delayed the dry season phenology of the vegetation, meaning that there was more leaf cover and long grass than usual for early July. Although the veld conditions meant it was harder to spot animals from the air, we benefitted from the presence of at least one GPS or VHF collar on each of the five herds which, adding to the highly professional and efficient work done by all members of the team, allowed for the campaign to be concluded successfully and in record time. During six days of consecutive operational flights, we located all existing herds in LINR, and proceeded with darting and

collaring 25 antelopes (22 giant sable and three roan), which included the deployment of 14 collars in giant sable females and eight collars in bulls. We prioritized the use of 15 GPS/Iridium collars, but for the remaining 10 animals we deployed VHF collars in addition to GPS ear tags, the latter still as experimental technology which we wanted to try out in the field. The age of animals collared was deliberately heterogeneous to provide the largest possible scope of biological data, and ranged from two years of age (in both sexes) to a 15-year-old bull. There were good indications based on apparent abundance of females and calves in the various herds, but unfortunately the poor visibility confounded estimates as the groups would disperse and hide easily, and prevented us from obtaining enough good quality pictures to allow the retrieval of accurate data to calculate demographic parameters.

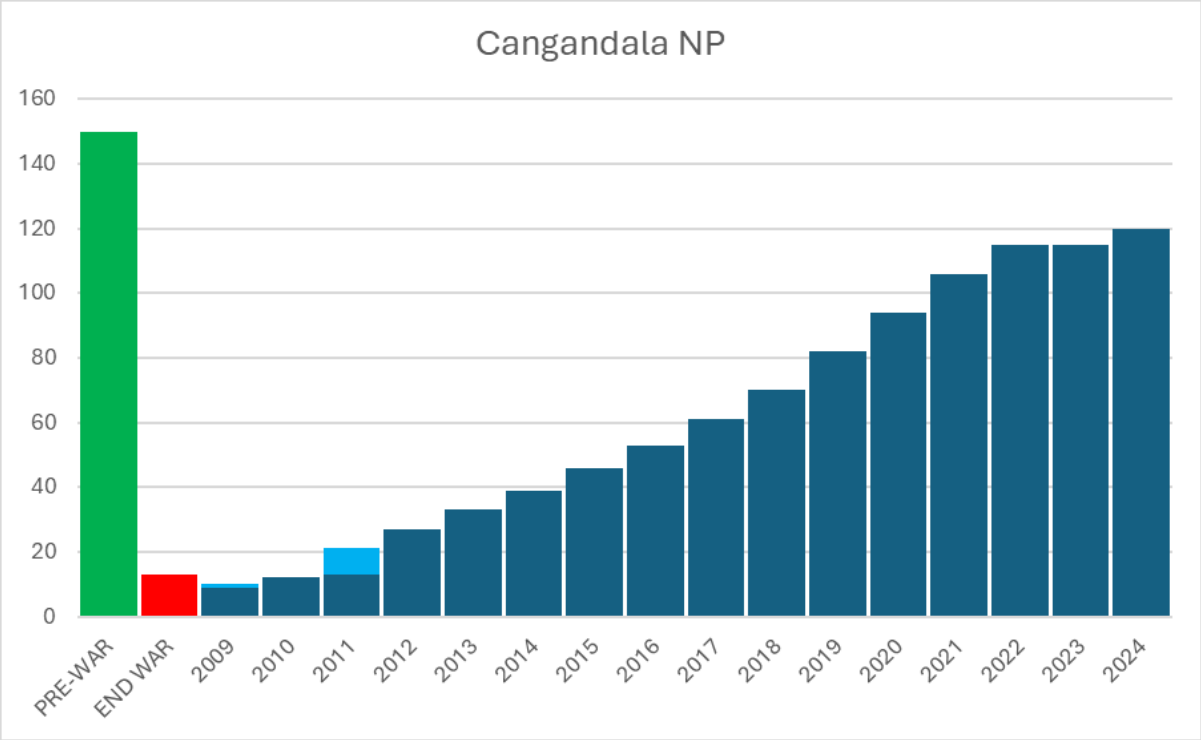
Poaching with snares and gin traps remains the most pervasive and immediate threat to the giant sable population in LINR. As expected, we came across and collected dozens of traps, mounted around water holes or freshly burnt patches. These included gin traps, and leg or neck snare traps built with steel cable or wire. As in previous collaring exercises, the shocking effects of traps become all too evident when darting and immobilizing animals. One giant sable female, found to be alone, proved very difficult to track by telemetry because the VHF signal would be incredibly noisy every time we attempted an approach and she started moving. When she was finally located and darted, we realized that she had a steel cable wrapped around the horns and hanging from the neck and collar and thus interfering with the radio signal (Figure 3/left). We were able to remove the cable and she was one of the few lucky ones, who had fallen onto a neck snare trap and had survived, possibly traumatized but uninjured. One giant sable bull was actually a second recapture, having been first collared in 2019 at the age of six, and then again in 2022 when he was severely injured from a leg cable snare. At the time he was in poor condition, having lost a front hoof and we had to surgically remove the parts of the cable from within its foot. The injury has since healed relatively well, and the bull now seemed healthy and in good physical condition, but of course he remains handicapped showing a smaller range of movements than other bulls, and is likely compromised as a successful breeder. However, the most remarkable encounter was with a limping roan cow accompanied by a small calf and a yearling, who on a closer inspection was revealed to have an amputated hindleg (Figure 3/right). The injury had healed, likely over several years, and one can only imagine the immense suffering that she was subject to, culminating with losing the leg. This three-legged cow had a swollen udder, clear indication of being the mother of the small calf, and seems likely that she is also the mother of the older one. Not surprisingly, this heroic female was in terrible physical condition, struggling to successfully rear her offspring while keeping them safe. This incident illustrates how damaging snares can be to conservation, but also underlines the extraordinary resilience of wild antelopes.

Figure 3. *(© Pedro Vaz Pinto) Left: snared giant sable cow – Right: amputated roan cow*

Estimating the population and demographic trends

Regularly obtaining a reliable census of the population is a critical tool in conservation policy, by providing invaluable metrics, assisting in evaluating the effectiveness of past and ongoing measures and allowing the quantification of demographic trends while identifying potential constraints.

In CNP, where a small founding population has been confined to a fenced camp since 2009, we have been able to obtain regular annual estimations and assess demographic trends of the population. It was clear that this population experienced explosive growth for a few years, but as density increased it has led to social pressure building inside the camp, and in recent years animals have been occasionally breaking through the fence. The park has a very thick canopy cover making it almost impossible to count animals from the air except when most of them congregate to graze on a floodplain for a few weeks every year at the end of the dry season. In 2024, we have estimated the total population in the camp to be around 120 animals, while the number of escapees is currently unknown and will be soon investigated, but it is likely not relevant. The giant sable population seems now to have stabilized having recovered from virtual extinction and are now approaching the numbers reported from the pre-war period, highlighting the remarkable success of the breeding program (Graph 1).



***Graph 1**. Estimated trends of the giant sable population in Cangandala National Park. In green: numbers estimated before 1975 and based on published studies. In red: potential estimation for the end of the war based on indirect evidence. In blue: our estimations based on ground observations and counts. Light blue represents giant sables translocated from Luando Reserve, which proved crucial to rescue this population.*

On the other hand, carrying out accurate counts of giant sable in LINR has proved very challenging over the years, as they are few in number and spread across large remote areas, often difficult to reach on the ground and in low visibility conditions. Small fixed-wing aircrafts are seldom available in Angola, but very low animal density dispersed across extensive thick-

vegetation areas would make absolute counts unrealistic and relative counts statistically meaningless. Locating and documenting the herds from helicopter every few years has been very useful, especially when done later in the dry season, but tends to miss a lot of animals, as groups may be split into subunits or disperse when chased from the air, making it very hard or impossible to accurately quantify the herds. Instead, for the past six years we have relied on footage obtained from drone incursions carried out every year at the turn of the dry to the rainy season, in September - October, when herds and bulls tend to congregate for breeding purposes. This methodology is only possible in conjunction with the satellite collars to track and locate the herds, and has proved very accurate in providing estimates for each herd and its composition and structure (discriminated between cows, calves, yearlings and juveniles), while the number of adult bulls (as they experience higher mortality), can then be added as a fixed proportion of adult females, and regardless of any being found or not near a herd. Although, the drone surveys are conducted every year, they are more accurate and comparable when done in the same year of the marking exercises, when all herds still maintain at least one active collar and the data retrieved from helicopter observations can also be incorporated. For the latest 2024 census in LINR we were able to film with drone all existing seven herds (two of the previous five herds had split, and this has since been confirmed via remote tracking). As result of all footage and observations, we estimate the giant sable population in Luando Reserve to be around 185 animals, entering the last quarter of 2024. There appears to be on average a relatively modest but sustained population annual growth in LINR, translated into two thirds increase over the span of 13 years (Table 1). In fact, the population could have doubled within this period, if it wasn't for a retraction during the COVID years, when an increase in poaching coincided with a prolonged drought, affecting survival and recruitment. In addition, several demographic parameters seem to have been consistently improving over the years, with a reduction in average age of breeding females and higher recruitment rates, stemming from the ratio between young animals and adult females. As poaching with traps targets disproportionately inexperienced animals (yearlings, juveniles and young cows), this tends to be reflected in low recruitment rates and older age of breeding cows on average.

***Table 1**. Giant sable population observations and estimates in Luando Integral Nature Reserve in six years in which helicopter counts were attempted. Since 2019 annual counts with drones were also incorporated. Young animals include yearlings and juveniles (one- and two-year-old respectively) of both sexes. Cows are adult females capable of having had first calf (age three at least). Bulls here include males after dispersing age (age three or older).*

Population/ Years	2011	2013	2016	2019	2022	2024
Calves	14	13	29	28	30	43
Young	27	20	41	50	42	49
Cows	28	23	45	40	37	51
Bulls	8	12	11	20	14	11
Observed Animals	77	68	126	138	123	154
ESTIMATE	**110**	**125**	**145**	**170**	**155**	**185**

In conclusion, the current total population of giant sable antelope, combining both protected areas, is probably around 300 individuals, which still represents only 15% of the numbers given for the 1970's, but has increased significantly in the past 15 years having recovered from imminent extinction. Although this magnificent antelope is still very much threatened and remains categorized as Critically Endangered, we are now reaching a stage in which we can set as a realistic goal the downgrading of its risk status within the next few years.

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Herd of giant sable, Cangandala National Park, Angola (© Pedro Vaz Pinto)

Duikers as a key taxonomic group in bushmeat supply and consumption chains, example in the Salonga landscape, Democratic Republic of the Congo

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Introduction

Bushmeat consumption plays a crucial role in food security and livelihoods across Central Africa, providing up to 70% of dietary protein in some rural areas (Nasi et al., 2011). Beyond subsistence, the bushmeat trade has grown into a widespread and dynamic economic sector, with supply chains extending from remote forest areas to major urban markets such as Kinshasa, Brazzaville, and even cities beyond the African continent (Fa et al., 2002; Wilkie & Carpenter, 1999). This trade involves a wide variety of species, including primates, rodents, and pangolins (Figure 1), but Artiodactyls - particularly duikers and wild pigs - often dominate in terms of volume, consumer preference, and market presence (van Vliet & Nasi, 2008).

Figure 1. *A woman and boy with a pangolin and a dead duiker, East province, Cameroon. Some subsistence hunting is allowed but many people hunt to sell. Selling bushmeat means the father of this family and his two wives can send this boy and his seven siblings to school. WWF works with government and business in Cameroon to try and provide alternative and sustainable sources of income to reduce illegal logging and poaching (© Brent Stirton / Getty Images / WWF-UK)*

Salonga National Park, a UNESCO World Heritage Site in the Democratic Republic of the Congo and the largest tropical forest protected area in Africa, lies at the heart of this trade network. The park spans over 36,000 km² of dense lowland rainforest and harbours high biodiversity, including several endemic and threatened species. Despite its legal status, challenging law enforcement, socio-economic dependency on forest resources, and difficult access to domestic meat alternatives make the park and its surroundings a major source area for bushmeat. Artiodactyls harvested in and around Salonga are transported along a complex network of roads and river systems to supply rural markets, roadside stalls, and large urban centres.

This study focuses on the role of Artiodactyls, specifically duikers, in the bushmeat trade originating from the Salonga landscape. By analysing patterns of hunting, transportation, trade, and consumption, it seeks to better understand the drivers and dynamics that sustain the exploitation of these species and the implications for conservation and sustainable management.

Methods

This study was conducted in and around Salonga National Park, a stronghold for Central African biodiversity, sheltering species such as the bonobo (*Pan paniscus*), forest elephant (*Loxodonta cyclotis*), and multiple species of Artiodactyls, including various duikers and wild pigs. Despite its protected status, the Park and its surrounding landscape are deeply embedded in bushmeat trade networks. Local communities depend heavily on wildlife for both subsistence and income, and bushmeat from this region is regularly transported along forest roads and rivers to urban markets, including Kinshasa.

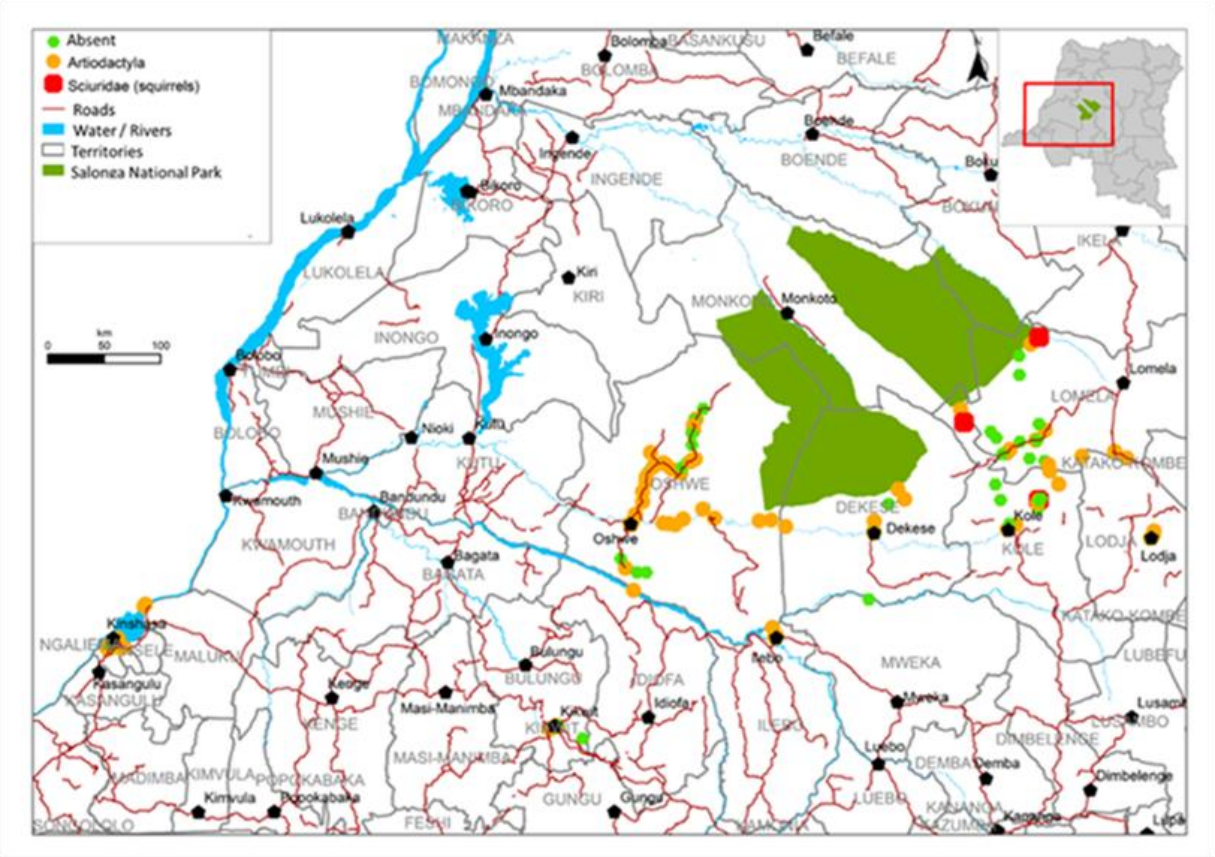

Figure 2. *Outlets visited between May and August 2022, where Artiodactyl species were found*

To document the role of Artiodactyls in this trade, field teams conducted extensive surveys between May and December 2022. They visited 159 bushmeat outlets - ranging from rural stalls to urban markets - across seven administrative territories (Bulungu, Ilebo, Kinshasa, Kole, Lodja, Lomela, and Oshwe) (Figure 2).

At these sites, researchers interviewed 1,288 stakeholders involved in the bushmeat trade, including hunters, transporters, vendors, and consumers. The surveys collected detailed data on hunting and transport practices, product forms (e.g., fresh, smoked), species traded, market dynamics, and consumption patterns. Particular attention was paid to Artiodactyls, which emerged as the most prevalent taxonomic group in the bushmeat supply chain, both in terms of volume and consumer preference.

Results

Prevalence in Trade

Of the 357 vendors surveyed, 64% sold Artiodactyls, and Artiodactyls accounted for 51% of all bushmeat products found across surveyed outlets, surpassing primates (30%) and rodents (15%) (Figure 3). The most commonly observed species were Weyns's Duiker (*Cephalophus weynsi*), Blue Duiker (*Philantomba monticola*), Bay Duiker (*Cephalophus dorsalis*), Yellow-backed Duiker (*Cephalophus silvicultor*), Black-fronted Duiker (*Cephalophus nigrifrons*), and Red River Hog (*Potamochoerus porcus*) (Table 1).

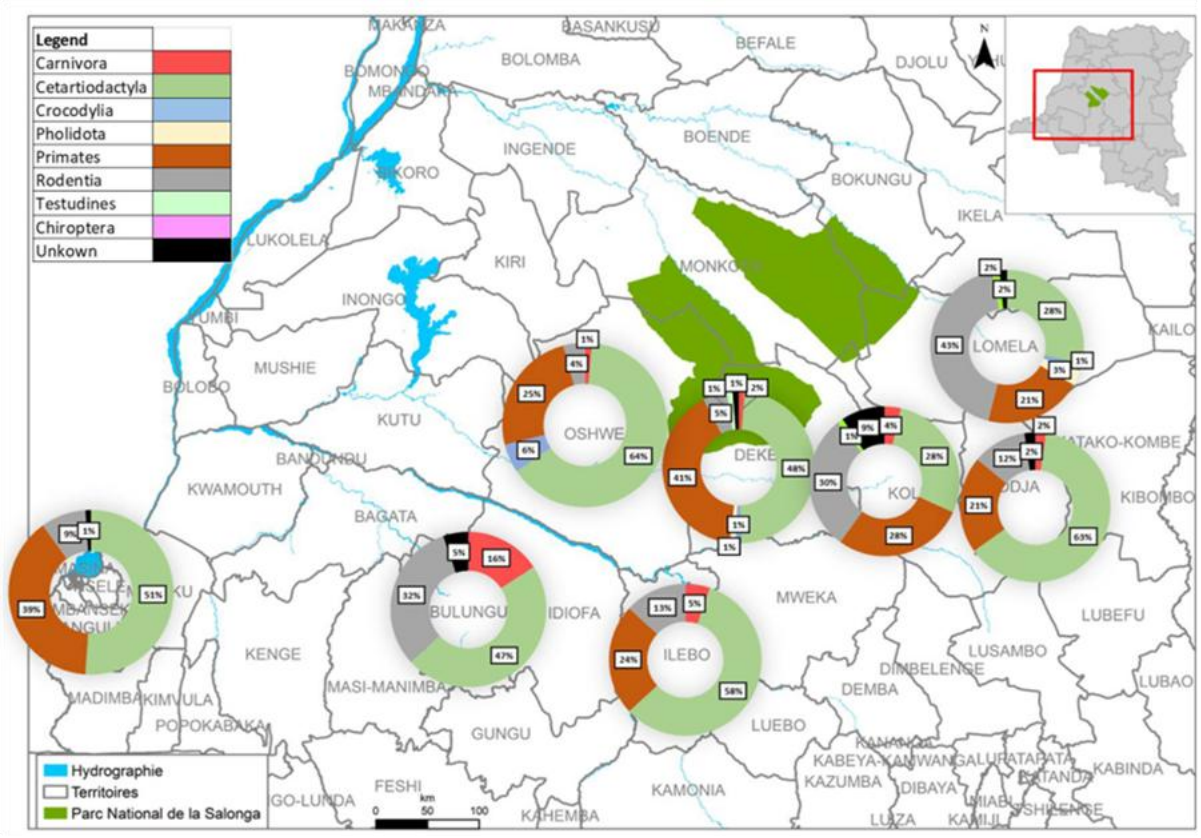

Figure 3. *Proportions of taxonomic groups found on vendors' stalls at outlets visited between May and August 2022 (out of 651 products).*

***Table 1**. Artiodactyls species found in the surveyed markets*

Artiodactyls species found in the surveyed markets[1]	**Number of products**	**% of products**	**IUCN Red List**	**CITES Appendix**
Red River Hog *Potamochoerus porcus*	89	0.14	Least Concern	Not listed
Weyns's Duiker *Cephalophus weynsi*	81	0.12	Least Concern	Not listed
Blue Duiker *Philantomba monticola*	59	0.09	Least Concern	II
Bay Duiker *Cephalophus dorsalis*	35	0.05	Near Threatened	II
Yellow-backed Duiker *Cephalophus silvicultor*	22	0.03	Near Threatened	II
Black-fronted Duiker *Cephalophus nigrifrons*	22	0.03	Least Concern	Not listed
Sitatunga *Tragelaphus spekii*	11	0.02	Least Concern	Not listed
Water Chevrotain *Hyemoschus aquaticus*	2	0.00	Least Concern	Not listed
Bongo *Tragelaphus eurycerus*	1	0.00	Near Threatened	III
Total number of products	**651**			

Consumer Preferences
Artiodactyls were the most cited taxon in consumer surveys (41–46%). Whole animals were preferred for purchase (46%), followed by smoked/dried meat (35%) and fresh cuts (18%). Most consumers cited taste (50%) and perceived healthiness (31%) as their primary motivations.

Forms of Trade and Transport
Artiodactyls were primarily traded in smoked/dried cuts (68%) and whole carcasses (28%). Storage was typically unrefrigerated, and meat was transported alongside other food products. Hunters mostly handled animals as whole carcasses (73%) and transported them short distances (average 24 km), while vendors engaged in longer supply chains reaching Kinshasa (+100km) (Figures 4).

Discussion
Artiodactyls play a central role in the bushmeat economy of the Salonga landscape. Their high availability, consumer preference, and flexible transport forms contribute to their predominance. These patterns reflect broader trends in Central Africa, where ungulates are targeted for both subsistence and trade (Wilkie & Carpenter, 1999; van Vliet & Nasi, 2008).

The sustainability of Artiodactyl hunting is uncertain, particularly under increasing market pressures and without consistent monitoring or regulation. Previous studies have demonstrated that duiker populations are particularly vulnerable to overexploitation due to their low reproductive rates (Hart, 2000; Cowlishaw et al., 2005).

[1] These results are based on observations made by field enumerators and are pending confirmation through DNA species identification analyses currently underway.

Figure 4. *Two men with a blue duiker on a motorbike, East province, Cameroon. Some subsistence hunting is allowed but many people hunt to sell. WWF works with government and businesses in Cameroon to help find alternative livelihoods for people and reduce poaching. (© Brent Stirton / Getty Images / WWF-UK)*

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Wildebeest transfers in Kenya

Kenneth K. Coe

In July 2023, while on a drive approximately 5 km east of the Voi Gate in Tsavo East National Park in Kenya, I was startled to come across a herd of seven eastern white-bearded wildebeests (*Connochaetes taurinus albojubatus*) (Figures 1 and 2). Wildebeests naturally occur along the western edge of Tsavo West National Park, but that has traditionally been the eastern boundary of their distribution in Kenya: they do not naturally occur in Tsavo East National Park. And for good reason -Tsavo East is too dry and the grasses too incompatible for wildebeests.

I was told by a local guide that the herd was translocated from a politician's farm just outside Tsavo West - which begs the question, why didn't the Kenya Wildlife Service, which oversees such translocations, simply move the wildebeests to Tsavo West? Whatever the motive, there is clearly a trend not only in Kenya, but also in many other places in Africa, of contriving zoo-like parks that harbour as many large mammal species as possible, regardless of ecological considerations. Shouldn't wildebeests be appreciated not only for their spectacular migrations and such, but also for their *inability* to cope with aridity and coarse grasses?

The implications of such translocations go well beyond the survival of the animals in new, unfamiliar, and unsuitable surroundings. Extralimital species can potentially provide unwelcomed competition, readily apparent or insidious, against indigenous endangered species. Kenya, for example, is down to its last handful of individuals of roan antelope (in Ruma National Park) and sable antelope (in Shimba Hills National Reserve), two species that have specifically evolved to inhabit areas with little competition. But in the last 15 years or so, zebra, hartebeest, and white rhino have been translocated to Ruma National Park, and zebra, impala, and hartebeest have been translocated to Shimba Hills National Reserve[1]. These introduced animals have since been competing with the roan and sable for forage, not to mention the transmission risk they have posed of nonnative diseases. It is little wonder that the roan and sable have struggled in the respective protected areas. Importing such competition, while trying to conserve the last remaining herds of species that are notorious for their sensitivity to interspecific competition, seems akin to heating and cooling one's house at the same time.

In the meantime, reports of more ill-conceived translocations accumulate by the day. Uganda kobs were introduced to Kidepo National Park in Uganda, where they have never occurred. White rhinos, completely foreign to East Africa, were introduced to the Ngorongoro Crater in Tanzania. And so on.

Isn't it time for a more sensible, informed, "globally agreed upon" approach to translocation matters?

[1] Zebra was likely a marginal resident or vagrant in Ruma decades ago. White rhino is extralimital to Ruma. Zebra, impala, and hartebeest were recorded in or near Shimba Hills decades ago when Shimba Hills had connectivity to the Somali-Maasai Biome to the west. Now isolated, Shimba Hills, composed mainly of coastal *miombo* woodland, is likely unsuitable or marginal at best for said species.

Figure 1. *A herd of seven wildebeests in Tsavo East NP, Kenya (© Kenneth K. Coe)*

Figure 2. *A close-up of wildebeests in Tsavo East NP, Kenya (© Kenneth K. Coe)*

ANTELOPE NEWS

New Partnership to Manage Gambella National Park, Ethiopia

On 11 December 2024 a long-term partnership agreement was signed between the Ethiopian Wildlife Conservation Authority (EWCA), the President of the Gambella Peoples' National Regional State (the Gambella State), and African Parks to manage Gambella National Park (GNP). Gambella National Park, situated in south-western Ethiopia, covers approximately 4,575 km^2 and is the largest national park in the country. GNP was established in 1973 and forms part of a much larger ecosystem in western Ethiopia and neighbouring South Sudan. GNP is located between two major river systems, the Baro River and Akobo River. It hosts large populations of white-eared kob *Kobus kob leucotis,* Nile lechwe *Kobus megaceros,* and buffalo *Syncerus caffer* as well as migratory birds and other wildlife.

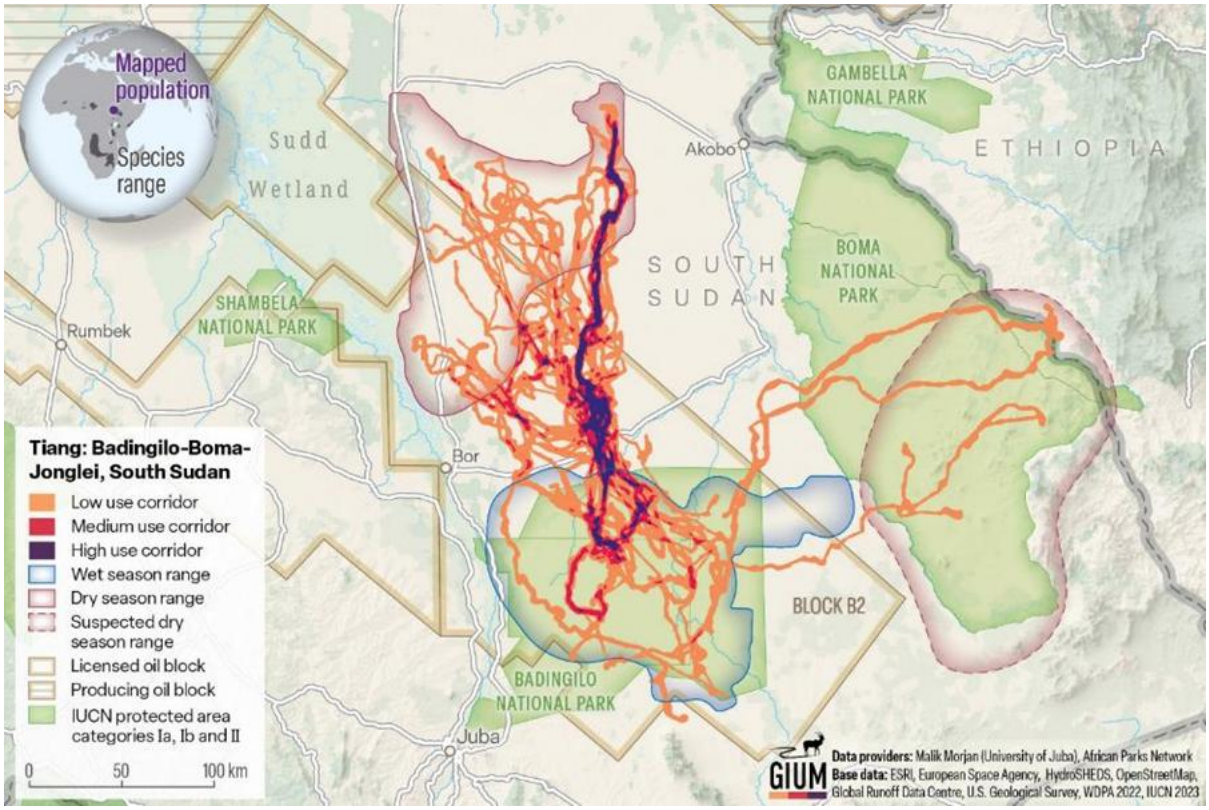
Gambella National Park, Gambella State, Ethiopia (© ASG)

The region is inhabited approximately 400,000 people belonging to various pastoral and agricultural communities, including the Nuer, Anuak, Majang, and Omotic peoples. The collaborative partnership between African Parks, EWCA, Gambella State, and local communities will develop a comprehensive strategy to conserve Gambella's biodiversity to enable the region to develop resilience to climate change while promoting the sustainable use of resources. The partnership will start with a 12-month transition period, enabling African Parks to better understand the needs of the communities living around the park and to co-create a management plan with input from local stakeholders.

Source: https://www.africanparks.org/ethiopian-government-partners-african-parks-manage-gambella-national-park

White-eared kob and tiang added to the GIUM Atlas

Migration maps for the white-eared kob *Kobus kob leucotis* and tiang *Damaliscus lunatus tiang* in South Sudan and Ethiopia have been compiled from recent tracking data and were released on the Atlas of Ungulate Migration in March 2025. Numbering an estimated 5 million animals, the kob is the largest population of migratory ungulates on the planet. The mapping also revealed that the tiang move across a landscape seven times larger than the Serengeti National Park. The new maps also show how this globally significant migration faces some important threats from proposed oil and gas developments.



Map of the tiang migration

Preparation of the maps and factsheets was greatly aided by Mike Fay and Megan Claase at African Parks who shared tracking data from their recent collaring efforts in collaboration with South Sudan Wildlife Service, and by Malik Morjan and Kasahun Abera and the Ethiopian Wildlife Conservation Authority who shared earlier tracking data for kob from the Gambella region. These collaborators also served as the species experts and factsheet co-authors.

Male and female white-eared kob migration (© David Simpson, courtesy of African Parks)

Tiang in Boma and Badingilo National Parks (© Marcus Westberg, courtesy of African Parks)

Sources:
https://www.cms.int/en/news/new-maps-document-world's-largest-land-animal-migration-across-south-sudan-and-ethiopia
To view the new maps, factsheets, and download map files:
www.cms.int/gium/resources/migration-atlas.html
A video is available at: https://www.youtube.com/watch?v=-z9znfDMFwY

Mountain bongo transferred to Kenya

On 23 February 2025, 17 mountain bongos, 12 females and 5 males, were repatriated to Kenya from the Rare Species Conservatory Foundation (RSCF) in Florida. The bongos were taken to a wildlife sanctuary in Meru county on the northeastern slopes of Mt. Kenya where they will acclimatise before being introduced into an area of natural habitat. These animals are the third-generation descendants of mountain bongos captured in Kenya in the 1960s and taken to zoos in the USA and Europe. The repatriated bongos were donated to the government of Kenya by the Rare Species Conservatory Foundation following decades of research and breeding since 1991. The complex logistics involved close cooperation between RSCF, Lewa Wildlife Conservancy, Tusk, DHL, and the Kenya Wildlife Service (KWS). To prepare the animals for travel, they were vaccinated for pathogens and given a pioneering, recombinant-DNA vaccine to help protect against tick-borne disease. The vaccine was developed specifically for the bongo project by the Infectious Diseases Laboratory (IDL) at the University of Georgia, USA, in collaboration with Kenya's International Livestock Research Institute (ILRI). On 22 February the 17 animals were placed in custom-built crates and given a long-acting sedative to ease their 30-hour journey. They were flown in a Mountain Bongo-branded DHL Boeing 767 the 7146 nautical miles to Jomo Kenyatta International Airport along with six tons of pelleted feed. Three US animal-care experts, including a wildlife veterinarian, accompanied the animals during their journey. Following arrival, KWS transported the animals 250 km by road to the new sanctuary.

The mountain bongo sanctuary was constructed by Lewa Wildlife Conservancy in partnership with the Meru Bongo and Rhino Conservation Trust (MBRCT) and Kenya Forest Service. This sanctuary is part of Kenya's first-ever conservation public-private, community partnership and contributes significantly to Kenya's National Bongo Action and Recovery Plan. This operation is one of three mountain bongo reintroduction projects currently in development.

Sources:
https://www.bbc.co.uk/news/articles/cm2ne8zz3pdo
https://www.kenyanews.go.ke/17-mountain-bongo-doing-well-in-their-newly-found-mount-kenya-home/

Oryx and gazelles released in AlUla, Saudi Arabia

Trial releases of small numbers of animals by the Royal Commission for AlUla began in February 2019. The success of those experiments has led to the current, scaled-up programme and by the end of the winter a total of 1,580 animals, 650 Arabian gazelles *Gazella arabica*, 550 sand gazelles *Gazella marica*, 280 Arabian oryx *Oryx leucoryx* as well as 100 Nubian ibex *Capra nubiana*, will have been released into across three of AlUla's six designated nature reserves: Sharaan, Wadi Nakhlah and Al-Gharameel. The total area covered by these three reserves is more than 12,400 km^2.

Source:
https://www.arabnews.com/node/2248051/saudi-arabia

Mongolian saiga population continues to increase

According to a survey by WWF-Mongolia in 2024, the Mongolian saiga *Saiga tatarica mongolica* population has reached 23,215 and an estimated 1,660 saigas have recolonised parts of the historic range after 70 years of absence. Despite these successes, the Mongolian saiga population still faces significant threats. In recent years, the frequency and severity of *dzuds* (extreme winter conditions) have increased significantly due to climate change. These extreme conditions are marked by poor plant growth during the summer and heavy snowfall in winter and pose a serious threat to many species, particularly the Mongolian saiga. The winter of 2024–2025 proved especially difficult, with snowfall levels across saiga habitat exceeding those of previous years. In response, WWF-Mongolia cooperated with local partners to provide hay at key points within saiga range to ensure the animals could access food during the harshest months. The hay was harvested from a 10-hectare section of a larger 91-hectare fenced area established by WWF-Mongolia and partners near the centre of Khukhmorit soum (district) in Gobi-Altai province. To evaluate the effectiveness of this emergency measure, camera traps were installed at three designated feeding sites and confirmed that saiga herds accessed the hay daily between 15 February and 6 March only feeding but also lying down to rest, indicating the sites provided both nourishment and shelter. While not a long-term solution, such biotechnical interventions are a crucial part of risk mitigation efforts to safeguard saiga during extreme climatic events.

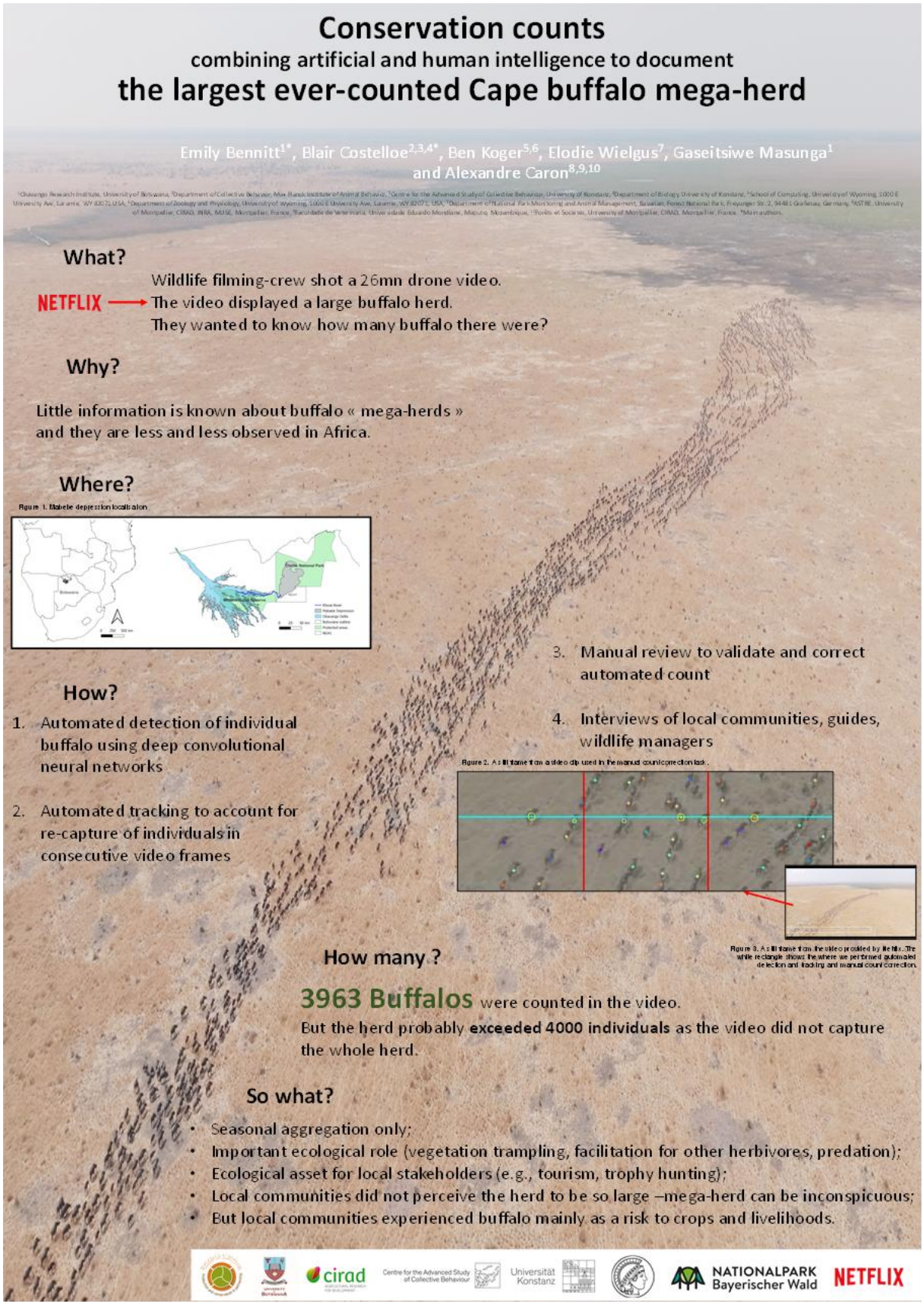
Habitat degradation, largely due to increased livestock grazing, remains a concern, while infrastructure expansion is fragmenting migration routes. The risk of wildlife diseases highlights the need for early-warning systems and coordinated vaccination policies.
Illegal trade in saiga horns also remains a pressing issue. WCS Mongolia is leading research on the local dynamics of trade using innovative survey methods to inform more effective enforcement. Strengthening stockpile management, improving cross-border cooperation, and disrupting trafficking networks remain critical components of the international conservation agenda. Anti-poaching initiatives, such as SMART patrols, have been highly effective, with no recorded illegal hunting incidents in recent years.

Mongolia's government has agreed to support actions included in the newly developed CMS MoU Work Programme for 2025-2030. These actions prioritize strengthening Mongolia's protected area network to cover a larger portion of the saiga's range, reinforcing small, isolated populations to support natural recovery, enhancing early-warning systems for disease outbreaks, and strengthening cross-sectoral collaboration.

Sources:
https://mongolia.panda.org/en/news_en/?390959/A-Historic-return-The-Mongolian-saiga-comes-home
https://mongolia.panda.org/en/news_en/?391198/Winter-relief-for-Mongolian-saiga

The largest ever-counted Cape buffalo mega-herd

Poster presented at the Savanna Science Network Meeting 2024, 03 March 2024 - 07 March 2024, Skukuza, Kruger National Park, South Africa (courtesy of Alex Caron).



Czech team celebrates 25 years of Western giant eland monitoring and conservation

Karolína Brandlová & Pavla Hejcmanová

A quarter of a century. A quarter of a century of meaningful work is indeed worth celebrating. Our first meeting with western giant eland (*Tragelaphus derbianus derbianus*) was in 2000 when Pavla Hejcmanová, one of our current team members travelled to Senegal to launch her Ph.D. on antelope ecology and conservation. Her goal was to find out exactly where the last individuals of the critically endangered western giant eland were distributed and what they feed on. Who could have guessed at the time that her dissertation would lead to an internationally renowned team that is currently the only one in the world working exclusively on the conservation of West and Central African savanna antelopes.

During the first ten years in Senegal, other team members were gradually joining, supported by the Czech University of Life Sciences in Prague and several research and development grants of the Czech Ministry of Environment. In 2010, however, a change in Czech foreign policy came and it looked like the antelope and the whole team could easily find themselves without funds for further conservation work and research. But the team had already achieved enough results to be able to prove their competence. Having conducted extensive ground surveys searching for signs of eland across 9,130km^2 in the Niokolo Koba national park (NKNP) we were able to confirm the restricted occurrence of giant elands in the core area of the park. In parallel, our team was asked to help with the management of a semi-captive population of giant eland, established in the fenced Bandia reserve in 2000 (Figure 1)). Founded by only one male and five females, maintaining genetic diversity was a tricky task for the population management. However, we can report that the elands have been doing well, the first calves were born in 2002 and many others have been born since. In 2006 we began separating the semi-captive population into multiple herds to minimize the inbreeding and maximize the reproduction of underrepresented individuals. In 2010, despite the lack of secured funding, we decided to continue, and we established Derbianus Czech Society for African Wildlife, nowadays known as Antelope Conservation NGO.

Figure 1. *Western giant elands, Bandia Reserve, Senegal (© Antelope Conservation)*

Numbers of elands have been growing, and so was our passion to understand them. We have conducted numerous field trips, gathered impressive amounts of data, analysed, published, and delivered the results into field conservation practitioners. We've been also training local staff

and students to spread understanding of the importance of elands and antelopes in general, and we have always been sharing the motivation to protect them, as keystone ecosystem components and jewels of the savanna, as well as a key prey species for large charismatic carnivores, such as lions and leopards.

Figure 2. *Western giant elands, Fathala Reserve, Senegal (© Antelope Conservation)*

During the years, the number of elands in the semi-captive population has grown to more than 190 (which is likely the size of population they were taken from in the wild) (Figure 2). In order to manage their relatedness, we have conducted more than 100 transfers into different breeding herds and the semi-captive population keeps growing (see Brandlová & Hejcmanová 2022).

We have not forgotten the wild population either. For more than two decades, we've been working with the *Direction des Parcs Nationaux du Sénégal* (DPN) who has been protecting the park through dedicated rangers and survey teams. We understood the importance of spending time in the field together with the DPN, exchanging our experiences and learning from these who knew the park the best.

For several years, we have also teamed up with other NGOs focused on conservation of carnivores. We are now proud partners of Panthera and Zoological Society of London, working together with local professionals to ensure the balance of the precious ecosystem of Niokolo Koba and its surrounding landscape (Figure 3). Thanks to our efforts to individually identify as many wild elands as possible, we are able to confirm the success of current conservation action in the park – the estimated number of elands based on camera trap data has likely now reached the magic number of 500 individuals!

Thanks to our work on elands, we have learned a lot about other antelopes and their often neglected situation across the savanna belt from Senegal to Central Africa. Slowly but surely, we have extended our work to other species, threatened or not, as we perceive even the common species as a source of information about the adaptation potential of antelopes, especially with growing anthropogenic pressure and ongoing climate change. So, after 25 years, our mission is simple: to start another 25!

Figure 3. *Left: Team of* Direction des Parcs Nationaux du Sénégal*, Panthera and Antelope Conservation NGOs setting up camera traps in Niokolo Koba National Park, Senegal (© Antelope Conservation) – Right: Breeding herd of Western giant eland taken by camera trap, Niokolo Koba National Park, Senegal (© DPN/Panthera Senegal)*

Acknowledgements

We are grateful to all collaborators who made this story possible. It has been a long list of organisations and, above all, a lot of great people over the course of 25 years. Thank you all. In Senegal, we have worked closely with most of the directors of the DPN since 2000, long time with Col. Souleye Ndiaye, currently with Col. Ibrahima Gueye - thank you. In the NKNP, we are grateful to all *Conservateurs*, in particular to Dr. Mallé Gueye, and also to rangers we spent time in the field with, as Amadou Demba Ndiaye. In the Bandia and Fathala reserves, the giant elands would not thrive without support of Christian Dering, Georges Rezk, Jacques Rezk, Lucien Haddad, Christophe Dering, Christoff Marais and the eland keepers, guides, drivers, Alioune, Camara, Oumar, Marietou, Tigana, Adama, Bodian to name just a few. For inspirative cooperation on education programmes we are grateful to Zao. Deep thanks to Henriette Diarra, for friendship and mutual understanding.

References

Brandlová, K., & Hejcmanova, P. (2022). Individual-based assessment of post-translocation fitness of ungulates: Lessons from the critically endangered Derby eland conservation programme. Conservation Science and Practice, 4(12), e12837.

Partnership For Species – a new initiative from C2S2

For decades, the main focus of conservation breeding programs in North America has been the Association of Zoos and Aquariums (AZA) Species Survival Plans (SSPs). Member zoos worked together to manage over 500 species to maintain self-sustaining populations. Unfortunately, hoofstock programmes are declining in the zoo community, due to a loss of dedicated space, restricted reproduction, and a general decline in institutional interest. The Conservation Centers for Species Survival (C2S2) established the Source Population Alliance (SPA) over a decade ago to help address this issue by connecting private landowners and AZA institutions to combine their resources in creating sustainable populations. In early 2023, an assessment of all SSP programs resulted in a large number of these programmes losing their SSP status, leaving these species without a management plan.

In response, C2S2 has established an innovative consortium framework called **Partnership for Species (PFS)** to build large, sustainable (genetically diverse and demographically varied) *ex situ* populations in North America of ungulate species that recently lost their SSP status. The Partnership for Species has selected 18 focal species for the first round of population planning, including four antelopes: Roan antelope *Hippotragus equinus*, Sable antelope *Hippotragus niger*, Slender-horned gazelle *Gazella leptoceros*, and Fringe-eared oryx *Oryx beisa callotis*. The next cohort of target species will be selected from Giant eland *Tragelaphus derbianus*, Lowland nyala *Tragelaphus angasii*, Greater kudu *Tragelaphus strepciseros*, Sitatunga *Tragelaphus spekii*, Wildebeest *Connochaetes taurinus*, common waterbuck *Kobus ellipsiprymnus*, Nile lechwe *Kobus megaceros*, Southern gerenuk *Litocranius walleri*, Bontebok *Damaliscus dorcas*, Gemsbok *Oryx gazella*, Arabian oryx *Oryx leucoryx*, and Cape buffalo *Syncerus caffer*, as well as Somali wild ass *Equus africanus*, and Persian onager *Equus hemionus onager*.

The common goal of the Partnership for Species is to achieve population sustainability via 1) implementation of alternate animal management practices and scientific research, 2) improving awareness amongst the public, and 3) returning populations to their native habitat. The Partnership For Species is a North American effort but it is global in reach. By bringing together private landowners, Conservation Centers, and zoos, each with an existing herd of hoofstock, The Partnership For Species will create large metapopulations of species that might otherwise continue to be diminished in their home range. These metapopulations serve as a resource for potential reintroduction projects, and an insurance against extinction. Participants in the Partnership For Species contribute funding for conservation, management, scientific research, and population sustainability and to improving awareness of the unique conservation value of these species.

The Partnership for Species has begun the process of transferring the management of these programs from AZA to PFS. PFS has identified species coordinators and is working with studbook keepers to evaluate the status of each population. The first PFS breeding and transfer plan was produced for Cape Buffalo. PFS members have also selected the Marwell Zoo/Tunisian Government Slender horned gazelle programs to be the first recipient of PFS conservation funding support.

The Chair of the C2S2 board of directors is ASG member and former editor of *Gnusletter*, Steve Shurter; another ASG member, Adam Eyres, is the interim Executive Director of the Conservation Centers for Species Survival.
Source: https://www.conservationcenters.org/partnership-for-species.html

Connochaetes taurinus *herd at Fossil Rim Wildlife Center, USA (© Fossil Rim Wildlife Center)*

RECENTLY PUBLISHED ARTICLES

AFRICA

Large mammal population trends in Comoé National Park (1958–2022): Towards understanding their asymmetric decline and recovery in West Africa's largest savanna park

Scholte, P., Pays, O., Chardonnet, B., Ouattara, A., & Tiomoko, D. (2025).
PLoS One, 20(5), e0320455.

Abstract

Africa's wildlife decline has received increasing attention, yet underlying reasons have remained opaque. Using generalized additive models of 25 terrestrial and aerial counts, we present West Africa's first large herbivore population trend series alongside potential drivers. Following Comoé national park's creation in 1968, large herbivore populations increased till the mid-1980s, but subsequently declined, amplified during Côte d'Ivoire's political crisis (2002–2011) when active management ceased. Between 2010–2022, populations of roan, hartebeest and waterbuck have quasi-recovered to pre-crisis numbers. The previously dominant kob, common hippopotamus and savanna elephant have remained at c. 10% of their 1970-80s numbers, however. Grasslands declined from 15 to 2% between 1979–2020, negatively impacting kob and common hippopotamus. Since 1962, surrounding human populations and cattle inside the park increased over six-fold, yet the number of rangers only doubled. These developments have resulted in a different wildlife assemblage. Species typical of long-coarse shrub savanna - hartebeest and roan – have reached pre-crisis levels, contrary to kob and common hippopotamus likely because of the reduction of floodplain grasslands and their gregarious distribution rendering them vulnerable to poaching. We recommend increased efforts to understand habitat changes and poaching pressures, prior to re-introducing extinct species. This study highlights the importance but also the challenges of studying large herbivore populations trends alongside drivers of change.

Habitat use by impala (*Aepyceros melampus*) breeding herds in an elephant-impacted woodland along the Chobe Riverfront, Botswana

Lucas P. Rutin (2024). *African Journal of Ecology* 62(1): 13244.

Abstract

Elephants have been structuring woodlands along the Chobe Riverfront, changing them to shrublands. Along with the loss of woodland cover, impala populations seem to be increasing along the Chobe Riverfront. We tested the prediction that elephant-induced loss in woodland cover has increased preferred habitats for impalas along the Chobe Riverfront. We found that home range sizes of impala breeding herds did not differ among seasons at all spatial scales. Impala breeding herds were more selective at broader spatial scales than finer spatial scales in all seasons. Impala breeding herds selected shrublands more than the other habitats throughout the year. The Baikiaea woodland and the riparian woodland were the most avoided habitats, with mixed combretum shrublands and relationships between habitat selectivity and group size, inter-herd encounter and habitat fidelity. The results of our study suggest that impala breeding herds used elephant-transformed habitats throughout the year. Season did not influence habitat selectivity, suggesting that the preferred habitat had higher required resources relative to the other habitats throughout the year.

Agonistic interactions and social behaviors in the Saharan Dorcas gazelle (*Gazella dorcas neglecta*): Using social network analysis to evaluate relationships and social structure in captive male groups

B. Cortés, A. Fidalgo, S. Díaz & T. Abáigar (2024). *Zoo Biology* 1–12. https://doi.org/10.1002/zoo.21824

Abstract

Social interactions, including agonistic behavior, are very important for the management and welfare of individuals forming groups in captivity. One of the main concerns for the stability and durability of adult male groups is a noticeable level of intraspecific aggression. This study comprises a Social Network Analysis to illustrate social structure in different groups of captive Saharan Dorcas gazelles (*Gazella dorcas neglecta*). Our main objectives were to examine the relationship between agonistic, affiliative, and association networks and their reciprocity, assessing also whether the agonistic networks can conform to a linear dominance hierarchy. For these purposes, we recorded the behavior of 23 adult males organized in five herds, three composed only of Saharan Dorcas gazelle males and two mixed herds in which there were also Mhorr gazelle males (*Nanger dama mohor*). Observations were carried out during 295 h through scan sampling. We found no correlation between the affiliative and association networks in any group, although there was a significant correlation between the agonistic and association networks in mixed-species groups which was not present in single-species groups. Overall, there was no consistent reciprocity in either affiliative nor agonistic networks and none of the agonistic networks showed a linear structure. These results indicate that affiliative behavior in Saharan Dorcas gazelles offers distinctive and valuable information about the bonds between individuals, however, their dominance structure is far more complex than previously thought. As information provided by affiliative and proximity behaviors is different in this species, we suggest considering affiliative interactions to stablish affinity between individuals. Evaluating different social behaviors and not only agonistic interactions in later studies, is also recommended to develop a more accurately daily management in zoos that guarantee group stability and individuals' welfare, which will improve the conservation of captive populations.

Seasonal changes in herd size and time budget of springbok (*Antidorcas marsupialis*) in southern Namibia

Peter Low Cunningham Jr. & Peter Low Cunningham Sr. (2024).
African Journal of Ecology 62(1): e13216

Abstract

Springbok (*Antidorcas marsupialis*) is an understudied species with a dearth of scientific work having been conducted, especially so for the Nama-Karoo vegetation type, in southern Namibia. We studied variations in herd composition and time budget of springbok by direct observations during a dry and wet season in southern Namibia and found significant differences ($p < 0.001$) in mean herd size between the dry and wet seasons. Herd size decreased from early morning to late afternoon during the dry season ($p = 0.037$) but not the wet season ($p = 0.362$). Springbok spent more time browsing during the dry season compared to the wet season ($p < 0.001$) when they spent more time grazing ($p < 0.001$). However, there was no significant difference in the time springbok spent walking between the two seasons ($p = 0.181$). Other energy-intensive activities such as grooming and running increased during the wet season ($p < 0.001$) due to favourable environmental conditions, breeding season and possibly an increase in parasite load.

Sitatunga (*Tragelaphus spekii*) food sources and habitat use in Marsh–Savannah-cultivation mosaics

Peter Happy Murwanyi, Robert Kityo, Enock Ssekuubwa & Mnason Tweheyo (2024)
African Journal of Ecology 62(1): e13246.

Abstract

Wetland conversion threatens wetland specialists by reducing their core habitat. The sitatunga is a wetland specialist with declining populations. However, knowledge of sitatunga ecology and threats is limited, particularly outside protected areas. We examined sitatunga food sources, and habitat use in undisturbed Marshes and Marsh–Savannah transition blocks, and a Cultivated (disturbed) block in River Mayanja wetland, central Uganda. We recorded indirect indices and sightings of sitatunga along a 10 km transect in each block, and surveyed food sources in 34 plots along the transects. Our results indicate that the indices and sightings of Sitatunga had lower relative frequency in the Cultivated than in the Marshes and Marsh–Savannah transition blocks. Sitatunga feed on 39 plant species in 13 families and six growth forms; grasses, herbs, sedges, climbers, shrubs and water weeds. *Cyperus papyrus*, *Echinochloa pyramidalis*, *Leersia hexandra* accounted for 58% of sitatunga food sources. There were more individuals and species with Sitatunga feeding activity in the Marshes and Marsh–Savannah transition blocks than in the Cultivated block. Our results show that sitatunga habitat use and food sources are constrained in disturbed habitats while threats are intensified. To maintain wetland integrity and stability of sitatunga populations, stakeholders need to address wetland encroachment.

Evaluation of the impact of population management on the genetic parameters of selected spiral-horned antelopes

E. Cetkovská, K. Brandlová, R. Ogden, B. Cerná Bolfíková (2024).
Biology 13: 104. https://doi.org/10.3390/biology13020104

Abstract

The rapid loss of biodiversity and the associated reduction and fragmentation of habitats means that ex situ populations have become an important part of species conservation. These populations, which are often established from a small number of founders, require careful management to avoid the negative effects of genetic drift and inbreeding. Although the inclusion of molecular data is recommended, their availability for captive breeding management remains limited. The aim of this study was to evaluate the relationship between the levels of genetic diversity in six spiral-horned antelope taxa bred under human care and their respective management strategies, conservation status, demography, and geographic origin, using 10 nuclear DNA microsatellite loci and mitochondrial control region DNA sequences. Our findings include associations between genetic diversity and management intensity but also with the diversity and contribution of wild populations to captive founders, with some populations apparently composed of animals from divergent wild lineages elevating captive genetic diversity. When population sizes are large, the potential advantages of maximizing genetic diversity in widely outcrossed populations may need careful consideration with respect to the potential disruption of adaptive diversity. Genetic data serve as a robust tool for managing captive populations, yet their interpretation necessitates a comprehensive understanding of species biology and history.

Modeling roan and sable patterns of spatial distribution in the Mudumu National Park, Namibia

Nauyoma, L.T., Rota, C.T., Lemos, F.G., Azevedo, F.C., Sequeira, F., Fabiano, E.C. (2025). *Wildlife Society Bulletin* 49(1), e1573. https://doi.org/10.1002/wsb.1573

Abstract

Large ungulates across the world are threatened with extinction due to habitat loss, land use change, and other anthropogenic pressures. While conservation measures are critical, for many populations the implementation of conservation measures is often not practical, either due to a lack of information on the species' biology or their conservation status. Here we consider 2 large ungulates, the roan (*Hippotragus equinus*) and sable (*H. niger*) antelopes, occurring in Mudumu National Park (MNP) Namibia, for which data on populations trends and habitat use are largely unknown. Here, we used camera trapping data collected in the dry and wet seasons between March and September 2021 in visit frequency models to understand the relationship between habitat variables and the distribution dynamics of roan and sable over time at MNP. Our results showed that roans in the wet season were detected more at sites with increased grass cover and detected less at sites near the Kwando River. In the dry season, roans were detected more at sites with increased grass cover and more termite mounds but detected less at sites near the Kwando River. In the wet season, sables were detected more at sites with fewer termite mounds. In the dry season, sables were detected more at sites with increased grass cover. We hypothesized that roan and sable use fewer areas near permanent water to avoid high predator densities and high grazing intensity by dense herds of short-grass grazers. The study findings are useful knowledge on 2 threatened ungulates and will be used to inform and develop comprehensive conservation programs and strategies that aim to lower the risk of extinction for roan and sable at a Namibian protected area.

Modelling of past, current and future distribution of suitable habitat for Menelik's bushbuck (*Tragelaphus sylvaticus meneliki* Neumann, 1902) in the Ethiopian highlands

Abuhay, Z. T., Ali, A. M., Atickem, A., & Zinner, D. (2025). *BMC Ecology and Evolution*, *25*(1), 1-14.

Abstract

Background - Wildlife species adapted to the Afro-alpine highlands are vulnerable to loss of habitat due to global warming accompanying potential upward shifts and elevational range contractions of their preferred habitats. Understanding the trends in the shift of suitable habitats of endemic taxa is key to planning the conservation and manage ment of species. Therefore, this study aimed to model the distribution of Menelik's bushbuck, a spiral-horned antelope endemic to Ethiopian highlands across the past (Last Glacial Maximum, and Mid-Holocene), present, and future.

Methods - We performed the ensemble modelling implemented in the "sdm" R package using 6 modelling tech niques (MaxEnt, Generalized Linear Model, Generalized Additive Model, Random Forest, Boosted Regression Tree, and Multivariate Adaptive Regression Splines). We combined 248 occurrence points of Menelik's bushbuck with 12 climatic, topographic, and anthropogenic variables. We selected these variables from originally 24 variables using the VIF step procedure to avoid highly correlated predictor variables for the final model run.

Results - The performance of the ensemble model was excellent having AUC = 0.97 and TSS = 0.88 values. Bio6 (minimum temperature of the coldest month) contributed most to the distribution of Menelik's bushbuck followed by bio12 (annual precipitation) and elevation. The model projection estimated the suitable habitat of Menelik's bush buck steadily decreases with increasing representative concentration pathways (RCP) scenarios and projection years. The

current suitable habitat of this species is estimated to be 25,546 km2 whereas the Mid-Holocene and the Last Glacial Maximum potential habitats was about 60,282.24 km2 and 33,652 km2 respectively. The magnitude of the loss of suitable habitats of Menelik's bushbuck will be highest in 2050 and 2070 under RCP 8.5 climate scenarios showing the loss in the currently suitable habitats of this species is over 95.1% and 99.8% respectively.
Conclusion - Melelik's bushbuck has lost suitable habitat since the LGM and the loss will be greatest in the future due to climate change and land use change. The sharp decline of the suitable habitat will greatly threaten the future survival of the species. Our modelling can assist in identifying potential refuge areas for the species to assist in its preservation.

Status update on the critically endangered Upemba Lechwe (*Kobus anselli*)

Manuel Weber, Ruffin Mpanga, Julien Mbulanga, Cameron Dobbie (2025)
African Journal of Ecology 63:e70060

Abstract
The Upemba Lechwe (*Kobus anselli*) persists in the Kamalondo Depression in the southern Democratic Republic of the Congo. We report sightings of 10 individuals across their historical stronghold and present the first published photograph of a live specimen. This study provides the first documented records since the species was described in 2005, and the first survey attempt in over 50 years. With an estimated population likely numbering fewer than 100 in an area with little protection, this species faces imminent extinction due to poaching. Urgent conservation measures are essential to prevent its disappearance.

Status and ecology of forest antelopes and other large mammals in the Ngoyla Faunal Reserve, Cameroon

Tene, R., Kobla, A. S., Fankem, O., Wacher, T., & Amin, R. (2024).
Mammalia, (0).

Abstract
Ungulates have undergone major declines in Central and West African forests as a result of bushmeat trade and habitat loss. Monitoring forest ungulate status is a critical conservation need. We undertook a systematic camera-trap survey of the Ngoyla Faunal Reserve within the ~11,000 km^2 Dja-Ngoyla Complex, part of the critical TRIDOM forest landscape in Central Africa. We deployed cameras at 36 sites over 2,734 camera-trap days. We recorded 3,307 independent detections of 12 species of forest ungulates. The Peters' duiker and blue duiker were the most abundant, accounting for 71 % of all ungulate detections, both with occupancy >85 %. The black-fronted duiker and white-bellied duiker were relatively widespread but rare. There were very few detections of Bates' pygmy antelope, sitatunga, forest buffalo, and bongo. These findings are similar to our baseline population estimates of ungulates in the neighbouring Dja World Heritage site. Our study provides further evidence of ecological partitioning among the more abundant duikers based on activity pattern and body size. The Dja-Ngoyla Complex is integral to the 178,000 km^2 TRIDOM conservation landscape. The landscape is a global conservation priority for securing the future of great apes, forest elephant, a community of forest ungulates, and other threatened species in the region.

Spatial ecology and home range drivers of the Weyns's Duiker (*Cephalophus weynsi*) in rainforest habitat

Bobo, D.N.B., Bessone, M., Cleva, R., Fruth, B. (2025)
African Journal of Ecology 63, e70041. https://doi.org/10.1111/aje.70041

Abstract

In Central Africa's tropical forests, duikers (*Cephalophus* spp.) are essential seed dispersers and prey for apex predators and humans. However, little is known about their spatial ecology, with no studies available for medium-sized species south of the Congo River. Here, we study forest duiker spatial use in the buffer zone of Salonga National Park, Democratic Republic of the Congo. We assess capture success of (1) collective day capture with nets and (2) collective night capture with head-torches and use GPS/VHF collars to investigate species-specific home-range (a) size, (b) use and (c) overlap. Across 7 months, 47 capture attempts allowed collaring 13 Weyns's (*C. weynsi*), two bay (*C. dorsalis*), and one black-fronted (*C. nigrifrons*) duiker, with similar success between techniques. Weyns's duikers mean home range size was 29.38 ha, with stable core areas and dynamic boundaries. While one breeding pair showed 72.80% overlap and a mean interindividual distance of 288 m, overlap in non-breeding pairs ranged between 4.5% and 52.2%, with an average interindividual distance of 533 m. Our assessment of the spatial use of Weyns's duikers suggests that anthropogenic disturbances might affect spatial behaviour and reproductive success. Further research on the spatial ecology of forest ungulates is key to improving conservation strategies.

Walter's Duiker (*Philantomba walteri*): A Literature Review on a Recently Identified and Potentially Vulnerable Species

Sahgui, E. M., Lhoest, S., Fonteyn, D., Daïnou, K., Michaux, J., & Vermeulen, C. (2024)
Ecology and Evolution, 14(11), e70473.

Abstract

Based on recent taxonomic and molecular tools, the Walter's duiker (*Philantomba walteri* Colyn, 2010), endemic to the Dahomey Gap in West Africa, has been recognized as a new species in 2010. This species is largely hunted and may already be threatened by extinction. This review paper aims to synthesize the current knowledge on this species, covering its taxonomy, morphology, biology, ecology, diet, seed dispersal role, reproduction patterns, activity rate, parasitology, spatial distribution, habitats, population densities, and ongoing human pressures. We carried out an exhaustive literature search using nine databases, going through 1200 initial references to finally retain a total of only 11 research articles mentioning Walter's duiker. Very few publications exist on the species due to its recent discovery. Existing studies focus on feeding, parasitology, and hunting pressure. Walter's duiker distribution range extends over Togo, Benin, and Nigeria. The species is hunted in a large part of its range, including in the reserves that are supposed to protect it. We synthesize the biological information related to the Maxwell's duiker as well as the Walter's duiker, as historically, these two species have been confounded and are morphologically similar. Our synthesis also highlights the scientific gaps for a better understanding of the biology of this species, and it proposes priority themes for future research. Priority should be given to studying the diet composition of Walter's duiker by analyzing rumens and feces, its role in seed dispersal and forest regeneration, its home range and activity rate, and the estimation of its abundance. All these information together would allow to thoroughly assess the species status and contribute to its conservation.

AMERICA

Pronghorn movements and mortality during extreme weather highlight the critical importance of connectivity

Aikens, E. O., Merkle, J. A., Xu, W., & Sawyer, H. (2025)
Current Biology, *35*(8), 1927-1934.

Abstract
Human disturbance and development are fragmenting landscapes, limiting the ability of organisms to freely move to meet their survival and reproductive needs. Simultaneously, extreme weather events—such as tropical cyclones, megafires, and heatwaves—pose a major threat to survival and may require animals to rapidly move to escape. As the dual forces of landscape fragmentation and extreme weather events continue to intensify, researchers urgently need to develop an understanding of the synergistic effects of these forces on animal mobility and survival. Here, we present a case study on pronghorn (*Antilocapra americana*) that undertook extraordinary long-distance movements (up to 399 km) to escape a once-in-two-decades extreme snowstorm in the Red Desert, WY, USA. Although Wyoming is a seemingly underdeveloped landscape, high fence density and two major highways in the region exposed pronghorn to novel barriers that delayed movement, restricted habitat access, and ultimately hindered their ability to escape extreme snow accumulation. The synergistic effects of movement barriers and extreme weather increased mortality rates by 3.7-fold such that over 50% of GPS-monitored pronghorn perished. These findings highlight the critical need to study escape movements and prioritize connectivity planning to curtail mass mortality events and ensure population persistence.

MIDDLE EAST AND ASIA

Cascading effects of anthropogenic excess food for predators on a peri-urban population of an Endangered ungulate

Amir Arnon, Torsten Wronski, Dan Malkinson, Ido Izhaki, Miranda Davis (2025).
Animal Conservation published online 30 January 2025. https://doi.org/10.1111/acv.13014

Abstract
A major side effect of urbanization is the increased availability of food for wildlife in peri-urban areas. Most research has focused on highly adaptive exploiter species that thrive under such conditions, overlooking avoider species, which are often predated upon by exploiters. Moreover, peri-urban areas are often grazed by livestock, mainly to reduce the frequency and intensity of fires, a practice that can also adversely affect vulnerable wildlife species. We examined the long-term effects of excess food provided to discourage exploiter species, namely golden jackal (*Canis aureus*) and wild boar (*Sus scrofa*), from foraging on farmland and in human residencies. Both species prey on endangered mountain gazelles (*Gazella gazella*) in our peri-urban study area, which is nested within a mosaic of settlements and agricultural lands in Mediterranean Israel. Because the park is routinely subjected to seasonal cattle ranching, we included cattle stocking rate (mean ± SD: 51.77 ± 18.21 cow grazing days/ha) as an alternative factor, into our analysis. We used Generalized Linear Mixed Models to analyze an extensive dataset, comprising 724 surveys conducted over 17 years, and modeled gazelle encounter rates in response to excess food and cattle ranching, while controlling for environmental factors. Our results suggest that anthropogenic excess food through diversionary feeding led to decreasing gazelle densities, probably through increased predation by exploiter species. When

diversionary feeding ceased after 12 years, gazelle encounter rates increased. We argue that this increase corresponds to population recovery, although it could be consistent with alternative mechanisms such as altered space-use and movement patterns. To conserve vulnerable and endangered wildlife species in urban and peri-urban areas, managers should reduce the availability of anthropogenic food for predators and scavengers. Furthermore, moderate cattle ranching (i.e., seasonal with low stocking rates) could mitigate potential adverse impacts of cattle ranching on mountain gazelle populations.

Ecology and conservation of the endangered Mongolian saiga (*Saiga tatarica mongolica*)

Chimeddorj, B., Bayartogtokh, B., Mallon, D., Buuveibaatar, B., Gantulga, B., Munkhtogtokh, O., Sergelen, E., & Gombobaatar, S. (2024). *Mongolian Journal of Biological Sciences* 22(1), 21–32. https://doi.org/10.22353/mjbs.2024.22.04

Abstract

In this review, we provide a detailed information on ecology and conservation of Mongolian saiga, which is endemic to western Mongolia. Due to human activities many ungulates including saiga have become threatened in Mongolia, during the last century. Currently, this antelope occurs in an area covering ca. 40,006 km^2 across 18 *soums* (districts) of four *aimags* (provinces) in Mongolia, which represents approximately 40% of its historical range. The movement of Mongolian saiga can be categorized as nomadic and a satellite collaring study shows that they do not usually cover large distances. Mongolian saiga has high twinning rates and the first-year survival of saiga's calves is about 50%. The most predation on young saiga is attributed to golden eagle (*Aquila chrysaetos*) and red fox (*Vulpes vulpes*). Advances in survey methodologies have led to a better assessment of the population status of Mongolian saiga, and the present population is estimated at 15,540 individuals. Infectious disease and linear infrastructures emerged as new challenges, in addition to the known threats, such as habitat degradation due to livestock overgrazing, poaching, and harsh climatic conditions. Recent conservation efforts to mitigate impacts of environmental and human influences, such as law enforcement, habitat management, disease prevention and community engagement have aided to an increase in the saiga population in Mongolia.

From isolation to integration: assessing habitat connectivity of the endangered saiga antelope in Mongolia

Chimeddorj, B., Buuveibaatar, B., Galsandorj, N., Dolgorjav, S., Myanganbuu, N., Bayandonoi, M., Gombojaav, S. 2024. *Mammalian Biology* 104, 221–229. https://doi.org/10.1007/s42991-023-00391-2

Abstract

This study provides the first comprehensive assessment of habitat connectivity for the Mongolian saiga, a species endemic to Western Mongolia. We utilized a resource selection function (RSF) to identify core habitats (CHs) throughout the saiga's entire range. Additionally, the Circuitscape approach was employed to map the least-cost paths (LCPs) among these core habitats. The RSF models revealed a strong preference for high productivity areas, while avoiding disturbed regions. Through a spatially explicit model, 34 CHs covering an area of 12,480 km^2 (30.7% of the saiga's range) were identified. The connectivity models identified 68 LCPs between various pairs of CHs, totaling 1700 km in length across the entire saiga range. The core habitat in the center of the saiga range displayed the highest centrality scores, highlighting their critical importance in maintaining their habitat interconnectedness. Furthermore, the presence of pinch points was observed in several CH pairs within the northwest region, suggesting potential bottlenecks that may hinder movement between these

habitats. It is imperative to implement measures aimed at addressing these pinch points and establishing secure corridors to facilitate the saiga movement between the CHs. To ensure the survival of the saiga, it is also crucial to mitigate the impact of existing and planned linear infrastructures, as well as other human disturbances that have the potential to fragment habitats and disrupt connectivity. These findings serve as valuable insights for targeted conservation efforts and the formulation of effective management strategies geared toward safeguarding this iconic species in Western Mongolia.

AFRICAN BUFFALO

Continent-wide genomic analysis of the African buffalo (*Syncerus caffer*)

Andrea Talenti, Toby Wilkinson, Elizabeth A. Cook, Johanneke D. Hemmink, Edith Paxton, Matthew Mutinda, Stephen D. Ngulu, Siddharth Jayaraman, Richard P. Bishop, Isaiah Obara, Thibaut Hourlier, Carlos Garcia Giron, Fergal J. Martin, Michel Labuschagne, Patrick Atimnedi, Anne Nanteza, Julius D. Keyyu, Furaha Mramba, Alexandre Caron, Daniel Cornelis, Philippe Chardonnet, Robert Fyumagwa, Tiziana Lembo, Harriet K. Auty, Johan Michaux, Nathalie Smitz, Philip Toye, Christelle Robert, James G. D. Prendergast & Liam J. Morrison (2024). *Communications Biology* 7: 792.

Abstract

The African buffalo (*Syncerus caffer*) is a wild bovid with a historical distribution across much of sub-Saharan Africa. Genomic analysis can provide insights into the evolutionary history of the species, and the key selective pressures shaping populations, including assessment of population level differentiation, population fragmentation, and population genetic structure. In this study we generated the highest quality de novo genome assembly (2.65 Gb, scaffold N50 69.17 Mb) of African buffalo to date, and sequenced a further 195 genomes from across the species distribution. Principal component and admixture analyses provided little support for the currently described four subspecies. Estimating Effective Migration Surfaces analysis suggested that geographical barriers have played a significant role in shaping gene flow and the population structure. Estimated effective population sizes indicated a substantial drop occurring in all populations 5-10,000 years ago, coinciding with the increase in human populations. Finally, signatures of selection were enriched for key genes associated with the immune response, suggesting infectious disease exert a substantial selective pressure upon the African buffalo. These findings have important implications for understanding bovid evolution, buffalo conservation and population management.

Human–African buffalo conflict: perceptions of damage, and mitigation strategies, in villages bordering Ngorongoro Conservation Area, Tanzania

Hariohay, K. M., Marandu, E. B., Lyimo, E. H., & Bajuta, E. S. (2025). *Oryx*, *59*(1), 101-108.

Abstract

Human–wildlife conflict is a critical and complex challenge in wildlife conservation. It arises when humans and wildlife interact and one or both parties suffer negative consequences from the interaction. This research assessed the extent of damage resulting from human–African buffalo *Syncerus caffer* conflict and explored mitigation strategies. We used a semi-structured questionnaire-based survey of 131 households randomly selected in Kambi ya Simba, Oldeani and Tloma villages surrounding Ngorongoro Conservation Area, Tanzania. Our results revealed that resource competition was the main factor inducing human–African buffalo conflict. The impacts reported most frequently were crop damage (especially during the wet seasons) and human casualties. Crops that were most often damaged included maize, beans,

wheat, peas and coffee. To minimize buffalo crop depredation, farmers currently use traditional mitigation approaches such as guarding farms, lighting fires, using torchlight and vocal and other auditory deterrents. In addition, a local coffee estate installed electrified fencing around its plantation. Our findings demonstrate the impacts of human–African buffalo conflict on local communities and the importance of continuing human–African buffalo conflict monitoring to improve conservation action and increase the participation of the local community in conservation activities. To minimize human–African buffalo conflict, we recommend conservation strategies that improve the natural habitat of the African buffalo. Most importantly, providing communities affected by human–African buffalo conflict with modern and more effective mitigation methods, paired with increased community awareness of the use of these methods, could result in significant reductions in the human cost of human–African buffalo conflict.

WATER CHEVROTAIN

Cranial ontogenetic development and sexual dimorphism of the extant water chevrotain *Hyemoschus aquaticus*

Hartung, J., & Böhme, M. (2025).
Mammalian Biology, *105*(2), 191-200.

Abstract

Tragulids or mouse-deer live in tropical Asia and Africa. They are the sister group of Pecora and have a long fossil record dating back into the Eocene. The extant African species, *Hyemoschus aquaticus*, is the sister taxon of all other extant tragulids and is therefore often used for comparison with fossil mouse deer. However, although many fossil tragulid skulls were found and studied within the last years, no attempt has been made for a comprehensive and comparative study of the ontogenetic development of cranial sexual dimorphism of *H. aquaticus*. Based on 39 extant skulls we establish an ontogenetic categorization of this species, comprising nine stages of tooth wear. We show that (I) in *H. aquaticus* upper canine development remains the main character for distinction of male and female, (II) that the eruption of the permanent upper canines and the development of sagittal crests starts before sexual maturity after the eruption of the second upper molar, and (III) that the development of further cranial crests (nuchal crests, temporal lines) varies greatly within the same age class and among the sexes. Thus cranial ornamentation is not useful as a primary distinction feature between the sexes and of limited importance in identifying ontogenetic age. The newly established categories of wear stages and the observed sexual similarity in cranial crest development can be used in future comparative studies with the other extant mouse-deer and especially with their fossil representatives.

Subsistence hunting impacts wildlife assemblages and functional ecology in tropical forests

Cain, B., Fa, J. E., Amin, R., Morrison, J., Avila Martin, E., Funk, S. M., ... & de Kort, S. R. (2025).
Scientific Reports, *15*(1), 3091.

Abstract

Unsustainable wild meat hunting poses a significant threat to wildlife and tropical forest ecosystems. While high levels of extraction linked to commercial trade have received significant attention, the sustainability of subsistence hunting by Indigenous Peoples in Africa has been less studied. Understanding how changing lifestyles, particularly the sedentarisation

of former hunter-gatherers, have affected the use of forest resources is crucial for wildlife conservation and livelihoods. The spatial management of hunting through the establishment of no-take zones, which act as sources for adjacent hunting areas, offers promise for the sustainability of Indigenous livelihoods. We conducted an extensive camera trap study in hunting areas subject to source-sink dynamics used by 10 sedentarised Baka communities. We compared species richness, occupancy, abundance, and community composition to a relatively non-hunted reference area in the adjacent Dja Faunal Reserve. Subsistence hunting by the Baka had a limited impact on species richness but significantly altered community composition and the abundance of carnivores, seed dispersers and granivores. These changes highlight that even the spatial management of hunting may have consequences for the sustainability of hunting systems and the functional ecology of tropical forests

WILD CAMEL

Utilization Patterns and Optimization Suggestions for Wildlife Passages in Xinjiang Nature Reserves

Fu, M., Wang, J., Li, S., Qin, L., Li, J., & Jin, S. (2025).
Ecology and Evolution, *15*(3), e70969.

Abstract

The expansion of linear infrastructure presents a significant threat to biodiversity, emphasizing the urgent need for regional studies on spatial variations and comprehensive multispecies research. This study surveyed and monitored wildlife passages across eight nature reserves in Xinjiang, evaluating their construction status, utilization patterns, and key factors influencing utilization rates, as well as providing optimization recommendations. The findings revealed that dedicated wildlife passages were scarce, especially in smaller reserves, which primarily relied on small bridges and culverts originally designed for water flow. Enhancing the construction of passages in these areas is strongly recommended. A total of 32 wildlife species were recorded, comprising 13 bird species and 19 mammal species. Ungulates, including bharal (*Pseudois nayaur*), goitered gazelle (*Gazella subgutturosa*), Asian wild ass (*Equus hemionus*), and wild Bactrian camel (*Camelus ferus*), exhibited high relative abundance indices, indicating a strong preference for utilizing passages. Passage utilization rates exhibited significant seasonal and diurnal variations. Winter usage was the lowest, followed by an increase in spring, peaking in summer and autumn. Birds exhibited particularly high passage utilization rates during migratory seasons, with the peak occurring in April. Additionally, nocturnal passage utilization rates were significantly higher than during other periods, with both sunrise and sunset showing positive selection, as indicated by 86.86% and 91.30% of monitored sites recording JSI > 0. To enhance the effectiveness of passages, seasonal and diurnal variations should be fully considered in passage construction and management, particularly by minimizing human activity during nighttime, dawn, and dusk. Utilization rates were significantly constrained by the intensity of human activity and the density of linear infrastructure. Passage type, size, and proximity to water were also critical factors. Optimizing passage layout, implementing dynamic management in grassland fence areas, increasing passage density, and enhancing ecological functionality are recommended strategies to facilitate wildlife movement and support biodiversity conservation.

GENERAL

Benefits of traditional and local ecological knowledge for species recovery when scientific inference is limited

Sheppard, D.J., Stark, D.J., Muturi, S.W. & Munene, P.H. (2024).
Frontiers in Conservation Science 5: 1383611. doi: 10.3389/fcosc.2024.1383611

Abstract

Many critically endangered species persist in remnant populations so small that ecological information required to assist recovery, such as species-typical demographic parameters and habitat preferences, can be difficult to acquire based on science alone. Traditional ecological knowledge (TEK) or local ecological knowledge (LEK) can fill information gaps and provide additional understanding, though this expertise is not everlasting and often overlooked. We report on research focused on a species survival plan for mountain bongo (*Tragelaphus eurycerus isaaci*), a critically endangered antelope endemic to Kenya, persisting in the wild with fewer than 80 individuals in four separated montane forests. In preparation for a potential conservation translocation of captive-bred bongos into one or more forests, extensive camera trapping yielded limited results, suggesting that data were based on the activities of just a few individuals. Moreover, additional information critical to translocations, such as typical group size and sex ratios, could neither be observed nor obtained from the literature. This knowledge gap was largely resolved using expert interviews conducted with eight former Kenyan hunters, along with historical range and browse mapping, enriching understanding of behavioral characteristics rendering bongo particularly vulnerable to exploitation. Consistently similar responses from observations spanning a 50-year period (1950s to 1990s) across four ecosystems added certainty to responses. This study endorses a combination of data sources when dealing with remnant populations, and specifically recommends making use of this documented mountain bongo TEK/LEK to inform decisions about potential bongo reintroductions in Kenya.

The contribution of community-based conservation models to conserving large herbivore populations

Kifner, C., Foley, C.A.H., Lee, D.E., Bond, M.L., Kioko, J., Kissui,B.M., Lobora, A.L., Foley, L.S., & Nelson, F. (2024).*Scientific Reports* 14: 16221.

Abstract

In East Africa, community-based conservation models (CBCMs) have been established to support the conservation of wildlife in fragmented landscapes like the Tarangire Ecosystem, Tanzania. To assess how different management approaches maintained large herbivore populations, we conducted line distance surveys and estimated seasonal densities of elephant, giraffe, zebra, and wildebeest in six management units, including three CBCMs, two national parks (positive controls), and one area with little conservation interventions (negative control). Using a Monte-Carlo approach to propagate uncertainties from the density estimates and trend analysis, we analysed the resulting time series (2011–2019). Densities of the target species were consistently low in the site with little conservation interventions. In contrast, densities of zebra and wildebeest in CBCMs were similar to national parks, providing evidence that CBCMs contributed to the stabilization of these migratory populations in the central part of the ecosystem. CBCMs also supported giraffe and elephant densities similar to those found in national parks. In contrast, the functional connectivity of Lake Manyara National Park has not been augmented by CBCMs. Our analysis suggests that CBCMs can effectively conserve large herbivores, and that maintaining connectivity through CBCMs should be prioritized.